AUTOMOTIVE INDUSTRIES

AUTOMOTIVE and AVIATION MANUFACTURING
ENGINEERING • PRODUCTION • MANAGEMENT

MARCH 15, 1955

37th ANNUAL STATISTICAL ISSUE

A Comprehensive and Comparative Presentation
of Important Specifications and Statistics on

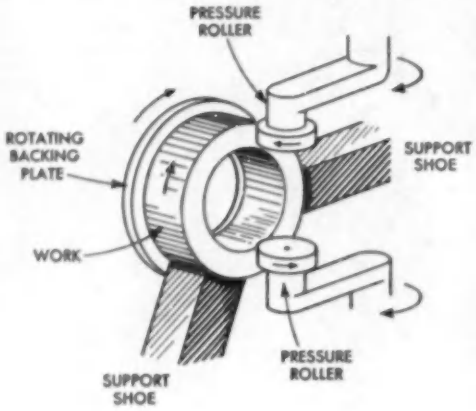
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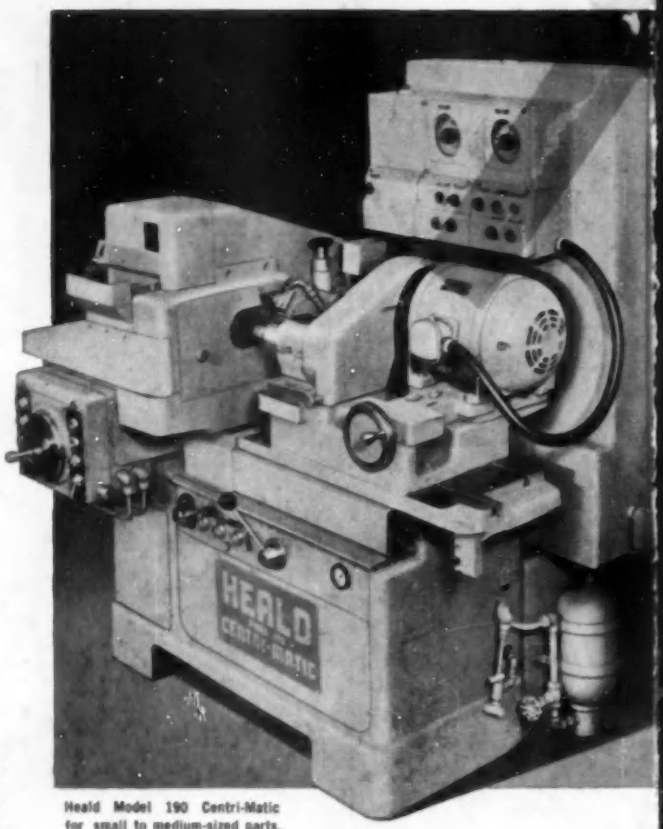
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MEET THE NEW HEALD

Centri-Matic





Heald Model 190 Centri-Matic for small to medium-sized parts.

Now thoroughly field tested and proved in service, the new Centri-Matic joins the Heald line of fully automatic centerless internals.

Basically, it differs from the roll-type centerless in that the work is located on *fixed support shoes* and is driven by a rotating backing plate against which it is held (see diagram above). The greater contact area of the support shoes tends to bridge any irregularities in the O.D., thus reducing the possibility of reproducing O.D. errors in the ground I.D.

Available in the Model 190 for small or medium-sized work and in the Model 291 for larger parts, the Centri-Matic is ideally suited to conveyor systems and automated work handling devices. Like other Heald internals, it maintains consistent high precision over the longest production runs. Model 190's are designed primarily to operate with central hydraulics in battery setups. Centri-Matic machines are furnished with belt or high-frequency wheelhead drive and with Size-Matic or Gage-Matic sizing method. For complete details, write for Bulletin No. 2-190-1.

The new Centri-Matic is another good reason why IT PAYS TO COME TO HEALD!

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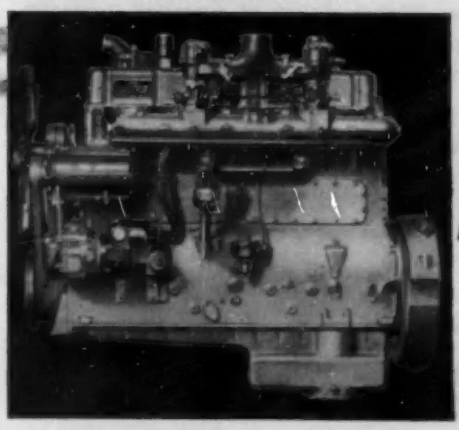
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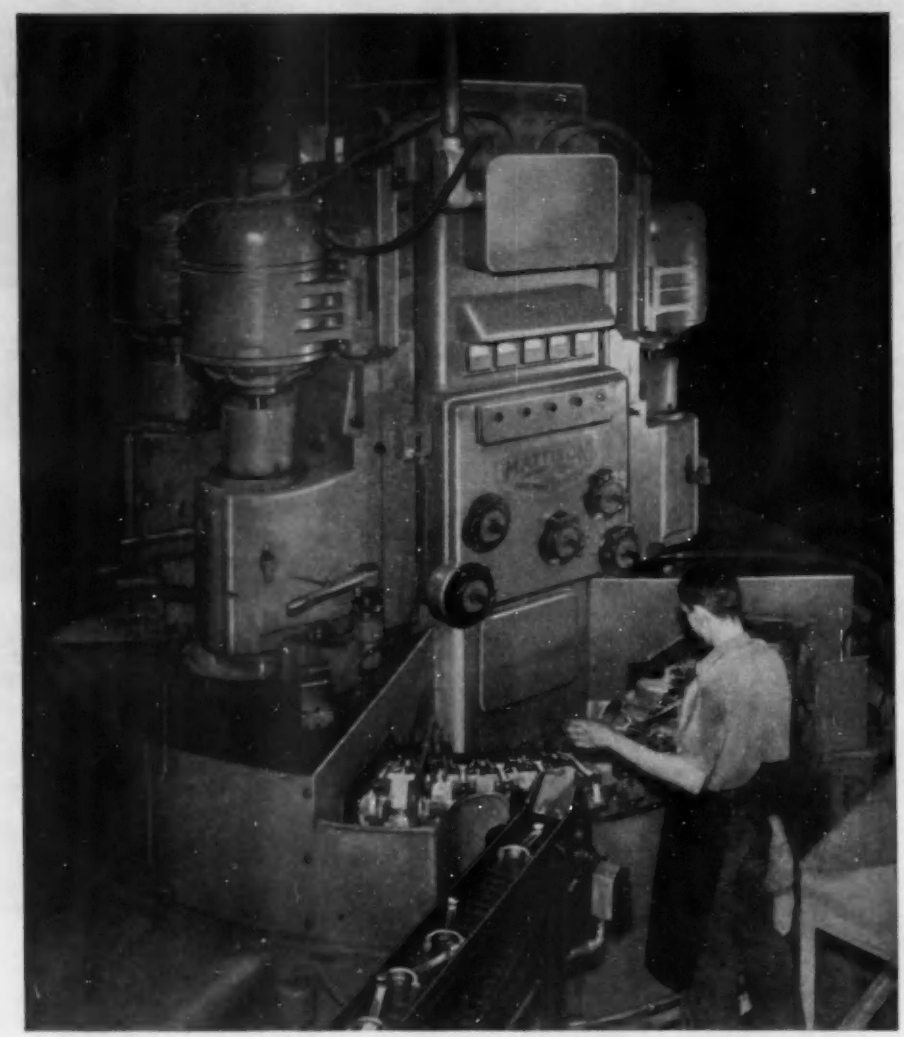
HF HOWE

WAUKESHA MOTOR COMPANY
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WAUKESHA FIRE FIGHTER ENGINES

145-GZB
High Output FIRE FIGHTER ENGINE
six cylinders, 5⅜-in. bore x 6-in. stroke, 817 cu. in. displ., 265
with counterbalanced and vibration dampened 3½-in. 7-bearing crankshaft; twin carburetors; precision extra high capacity bearings; overhead valves with Stellite-faced exhaust valves and seats; removable wet sleeve cylinders. Arranged for full electrical equipment and all modern accessories. Send for Bulletin 1662.



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MARCH 15, 1955 VOL. 112, NO. 6

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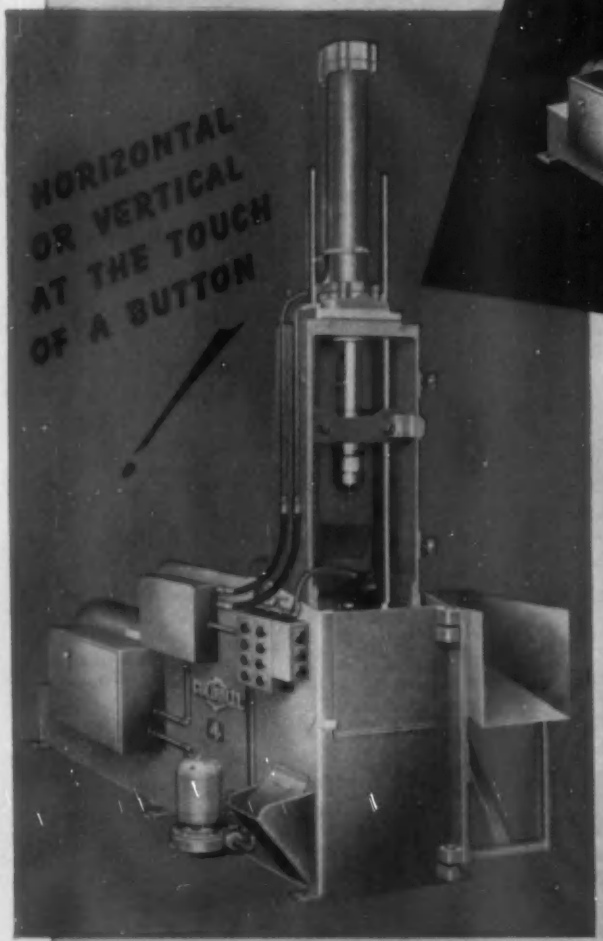
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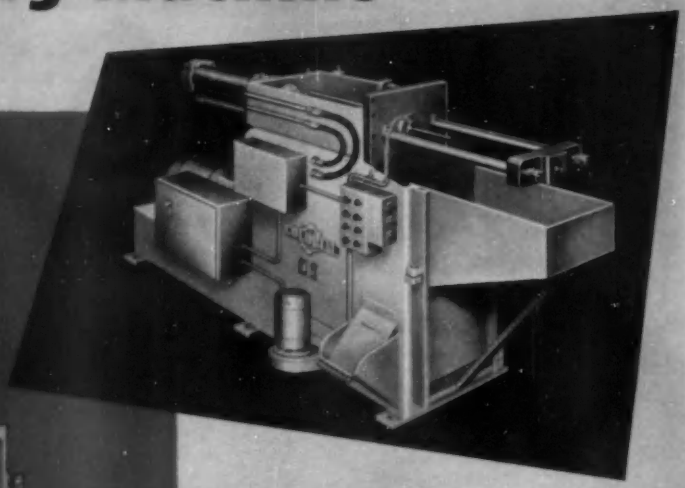
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the COLONIAL "4" *Convertible* Broaching Machine





This amazing new Colonial "4" broaching machine is the answer for the shop that requires a broaching machine flexible enough to be changed from horizontal to vertical and back in a matter of seconds.

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2. **Pull-down broaching** } **vertical position**
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Rated capacity is six tons for pull-down broaching, push broaching, or press work, and four tons for horizontal pull broaching. Stroke capacity is 28" in horizontal and 24" in vertical position. Guide-bar construction maintains accurate alignment throughout the working stroke for pull-down broaching. Safety interlocks prevent tilting the machine unless the ram is retracted.

Ask for bulletin FW-55 for complete description of the Colonial "4" Convertible.

PIONEERS OF H.S.S. BROACHING

COLONIAL

BROACH CO. DETROIT 32

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You don't need a lot of extra "holding gimmicks" with HYATTS!

YOUR COMPLETE LINE OF CYLINDRICAL ROLLER BEARINGS

Look at this speed reducer, for instance. The inner race of the HYATT Hy-Load is held on the shaft with a heavy press or shrink fit—*nothing more!* No money wasted for end clamps, threads, nuts, screws or washers. And brother, that rotating HYATT race will *never crack or come loose* come h - - - or high water. Know why?

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Refiners of famous High-Test Blue Sunoco Gasoline



Tomorrow's oil seal here today in Victor Silicones

Type K-6 Dual Lip
Silicone Pinion Seal with Flange

Patent 2172325—Sept. 5, 1939
Patent 2233902—Mar. 4, 1941



Superior bonding of Victor silicones to metal channel permits a strong, one-piece, leakproof construction. Internal lip retains lubricant; external lip excludes foreign matter. Valley in between the sealing lips is pre-lubricated for minimum friction. Cartridge-type flange allows ready removal of seal from housing without damage.

Here's the oil seal that makes a complete break with yesterday's sealing elements of tired leather, leather with additives . . . even steps out far ahead of synthetic rubber.

Here, Victor-developed silicones start a new era of automotive sealing progress, in highly engineered designs for tomorrow's tougher, more exacting needs. Tested as original equipment since 1953, Victor Silicone Seals were the first of their kind to merit approval by the auto industry.

Advantages of silicones, found in Victor's earliest pioneering of these compounds, have been developed to the finest degree. Their suitability for high temperatures beyond 300 deg. F., and for high peripheral speeds, measurably exceeds that of conventional materials. They work well with the new lubricants. Throughout life, the element remains flexible and operative, does not harden or get brittle.

These premium seals can now be specified in the competitive market. Victor's skill in manufacturing—as in development—has led the way to large-quantity production at prices consistent with performance values. Your inquiry is invited.

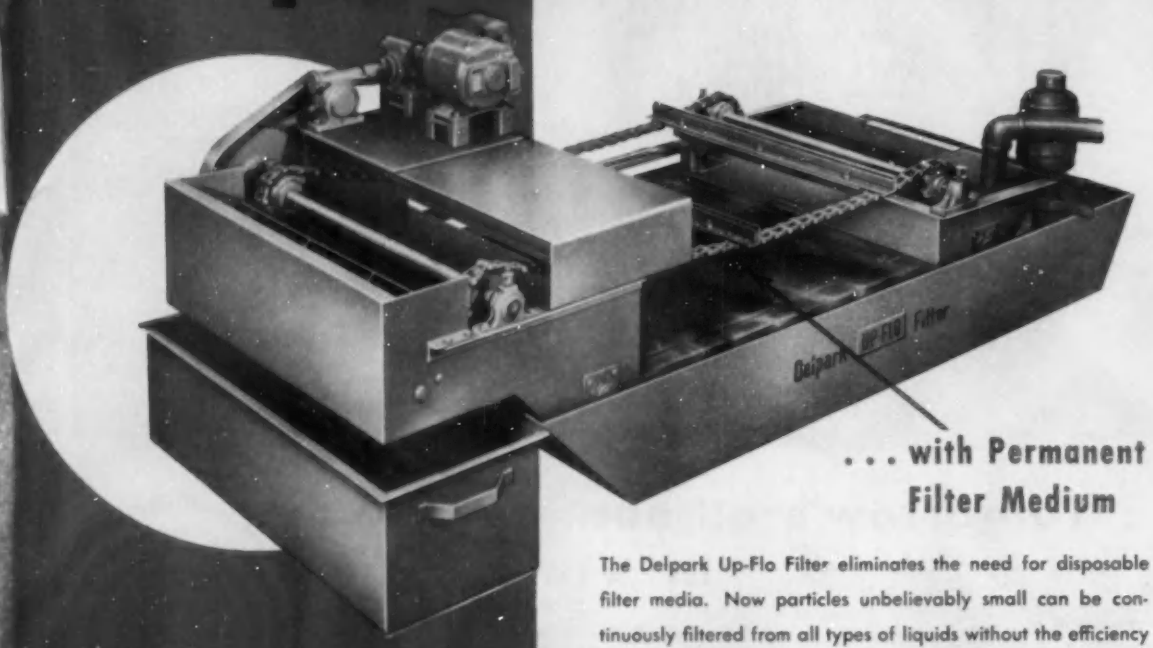
VICTOR Silicone Oil Seals

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. . . with Permanent Filter Medium

- FULL FLOW
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- FULLY AUTOMATIC
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FRED J. GRUMME
Vice-President
Equipment & Maintenance
Aero Mayflower Transit Co., Inc.



HOW ROSS STEERING SAVES MAYFLOWER

Time . . . Worry . . . Money

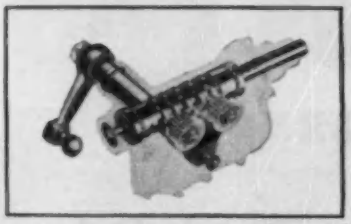
▶ **"All our Internationals** have Ross Steering," says Fred J. Grumme, Vice-President in charge of Equipment and Maintenance, Aero Mayflower Transit Co., Inc., nation-wide furniture movers.

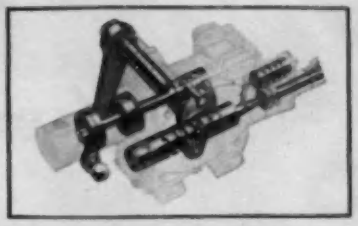
Mr. Grumme continues, "Our drivers like the ease, stability and safety that Ross Steering gives. And we like Ross' excellent record of trouble-free performance and long service life. All this adds up to faster, safer moves and minimum down time. In short, we figure that Ross Steering helps save Mayflower *time*, *worry* and *money*."

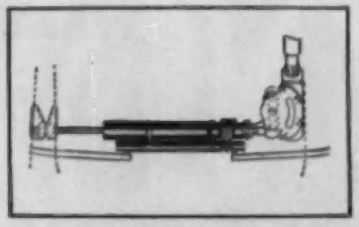
Exclusive steering specialists for 49 years, Ross provides the *right* gear for every steering need—manual or power—and invites discussion of *any* steering problem.

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Ross
STEERING

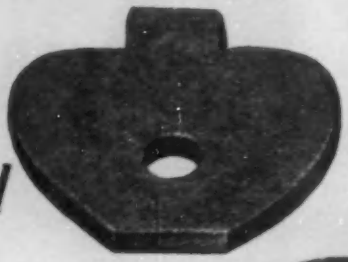




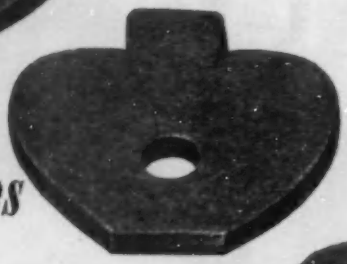


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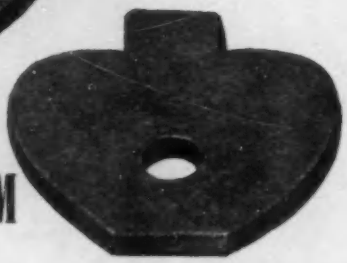
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...always UNIFORM



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When Western Felt cuts a component part to your specifications, piece after piece is a precision-cut part. You want that kind of uniform precision because the performance of *your* product depends upon it. And because of the peculiar properties of wool felt fibres, especially where the more dense types are specified, it can be processed with amazingly close tolerances. Tolerances as close as a few-thousandths of an inch can be supplied when required.

Western Felts are manufactured to the density you require—cut and supplied exactly to your specifications. They resist wear, age and weather...never ravel nor fray. They seal, insulate, absorb sound and vibration, or lubricate...as you wish! Chemically treated, they can be moth-proof, mildew-proof, flame or water resistant.

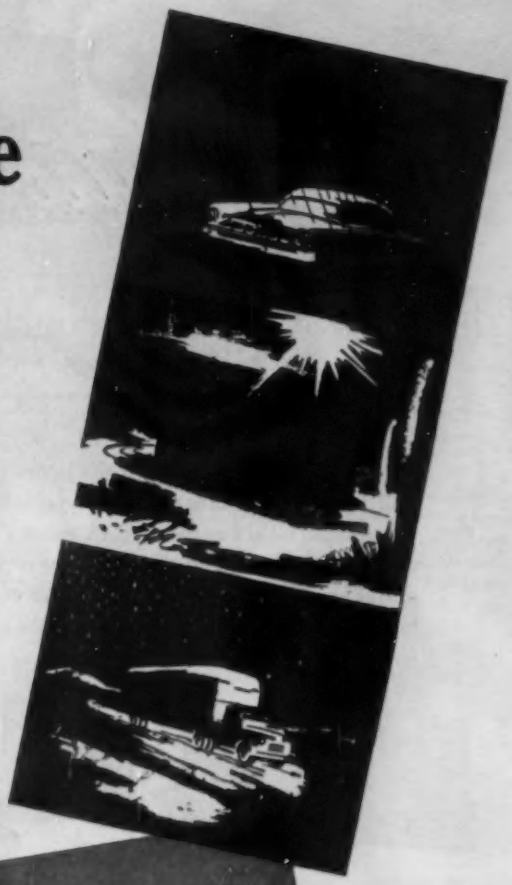
You name it...specify it...we put the benefits of 54 years of experience back of making a felt component that will meet your specifications. Write today—your inquiry will receive prompt attention.

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more dependable starting *under all operating conditions*



"No Kick-Out" feature sets new standards in starting performance.

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ECLIPSE MACHINE DIVISON OF Bendix AVIATION CORPORATION

ELMIRA, NEW YORK

Export Sales: Bendix International Division, 205 East 42nd St., New York 17, N. Y.

Bendix folo-thru starter drive



costs less —*The new Folo-Thru Drive requires no actuating linkage and the less expensive solenoid may be placed in any convenient position. Results are lower installation costs and no adjustments. Complete detailed information is available on request.*

Bendix* Folo-Thru Starter Drive **Bendix* Automotive Electric Fuel Pump** **Stromberg* Carburetor**

10 solutions TO DIVERSE PRODUCTION PROBLEMS WITH W. F. & JOHN BARNES SPECIAL MACHINES AND EQUIPMENT

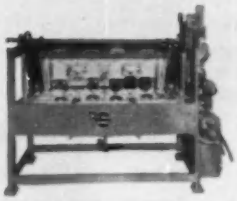
The 10 examples shown here are typical of the broad range of special machinery and allied equipment that are today designed and built at W. F. & John Barnes. All have been especially engineered to meet a specific production problem. Each represents a profitable solution to the problem of saving time and cutting costs. Collectively, these machines present tangible evidence of the coordinated skills and versatility of machine building experience available to you at Barnes.



1 **TWO-WAY HORIZONTAL BORING MACHINE** — rough bores and chamfers automobile transmission cases at 82.5 pieces per hour (80%). This unit completes 18 operations.



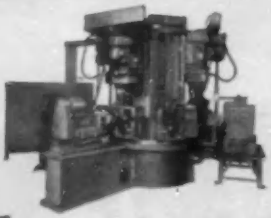
2 **BARNES SPECIAL MACHINE** — drills and counter-sinks Tractor Spindle Extensions. Performs ten operations with pieces completed at the rate of 19.5 per hour (80%). Center head has 4-spindle cluster arranged for pivoting to provide adjustable spindle pattern.



3 **SPECIAL SEMI-AUTOMATIC TESTING MACHINE** — developed to test for leaks in automotive power steering castings. Four castings are inspected with each machine cycle. Workpieces are loaded and unloaded manually . . . all other operations are performed automatically.

4 **AUTOMATIC RETORT LOADING MACHINE** — one of a variety of special equipment, such as glass handling machines, can unloaders, carton uncasers, and special conveyors, designed and built by Barnes for the food, chemical, and beverage industries.





5 **BARNES 6-STATION CENTER COLUMN MACHINE** — with 72" diameter indexing table, completes 18 operations per piece, 118 pieces per hour, on Cast Aluminum Transmission Extension Housings in a large automotive plant.

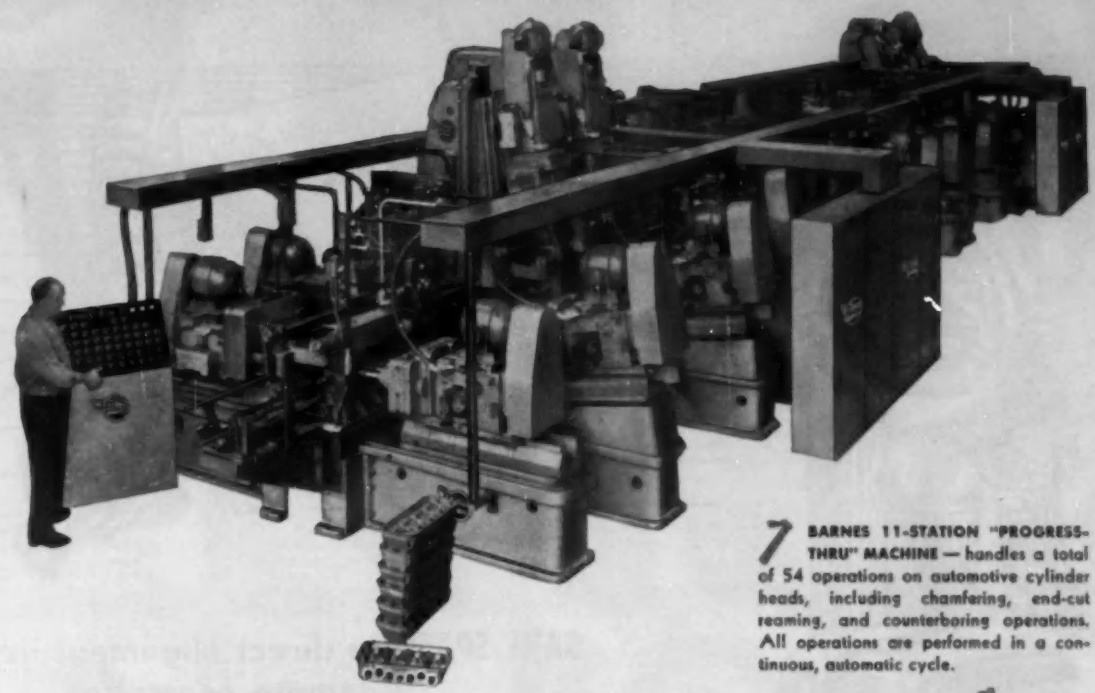


6 **SPECIAL VERTICAL SINGLE-SPINDLE MILLING MACHINE** — with 72" saddle, slab and face mills mounting pads on a variety of motor frames. Quick setup features enable 6½ pieces to be completed per hour.

W. F. & JOHN BARNES

BUILDERS OF BETTER MACHINES SINCE 1879

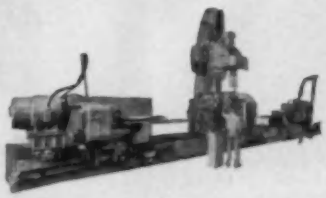
MULTIPLE SPINDLE DRILLING • BORING • TAPPING



7 **BARNES 11-STATION "PROGRESS-THRU" MACHINE** — handles a total of 54 operations on automotive cylinder heads, including chamfering, end-cut reaming, and counterboring operations. All operations are performed in a continuous, automatic cycle.



8 **ELECTRICAL CONTROL PANEL** — automatically controls regeneration and service operations on two sets of deionizing tanks, alternating units for a constant supply of treated water . . . one of countless applications where Barnes Electrical Controls add efficiency and economy to everyday industrial operations.



9 **SPECIAL TWO-WAY VERTICAL AND HORIZONTAL BORING MACHINE** — rough, semi-finish, and finish-bores, chamfers, and faces Final Drive Housings. Spindles automatically change speeds and feeds to meet boring and facing requirements.



10 **APRON-TYPE CONVEYOR** — especially designed for efficient removal of chips from machines used in a large automotive plant. Barnes Conveyors have been designed and built for a wide variety of applications.

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SPECIAL ELECTRICAL EQUIPMENT and CONTROLS — individually designed and built for maximum safety and ease of control with circuits that assure the most dependable coordination of all machine functions.

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SPECIAL HANDLING AND CONVEYOR EQUIPMENT — designed and built to reduce work handling, effect maximum safety and efficiency.

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SAVE SPACE—a direct alignment in remote control or power transmission around corners.

SAVE PARTS—less working units needed in this simple direct grouping.

SAVE COSTS—more economical construction, lower cost of maintenance.

Write on your letterhead for our latest Flexible Shaft Manual

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A Subsidiary of the S. S. White Dental Mfg. Co.

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WEST COAST PLANT: 1638 So. Flower Street, LOS ANGELES 15, CALIFORNIA.

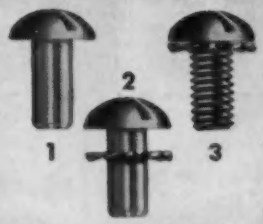
Why SEMS-by-SHAKEPROOF reduce assembly costs!



Putting lock washers on screws by hand is costly and time consuming.



With pre-assembled SEMS-by-SHAKEPROOF two parts are handled as one.



The lock washer is mechanically pre-assembled on the screw —held on by the rolled threads.



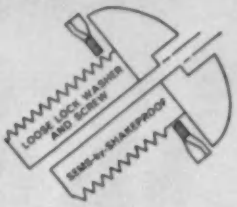
Lock washers can't drop off, can't be wasted or "forgotten."



The lock washers on SEMS-by-SHAKEPROOF always rotate freely...



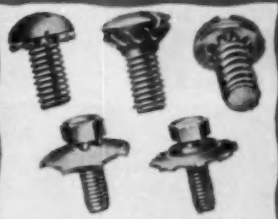
Multiple, tapered-twisted teeth give positive mechanical locking action.



Locking teeth fit closer under the screw head for maximum locking power.



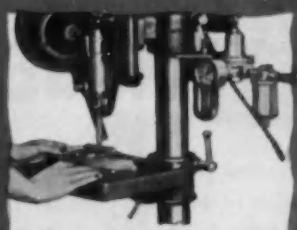
You get the best protection against vibration loosening with SEMS-by-SHAKEPROOF.



Shakeproof's complete line of standards will meet nearly every assembly need.



Specials and multiple-piece units make the range of application unlimited.



One-piece SEMS -by-SHAKEPROOF can be hopper fed for automation!



Eliminate unnecessary handling. SEMS-by-SHAKEPROOF will save time, reduce costs!

Free Sample Kit



Now . . . make your own tests! See for yourself how SEMS-by-SHAKEPROOF can save money in the assembly of your product. Write for your free sample kit today!

SHAKEPROOF

"Fastening Headquarters"®

DIVISION OF ILLINOIS TOOL WORKS

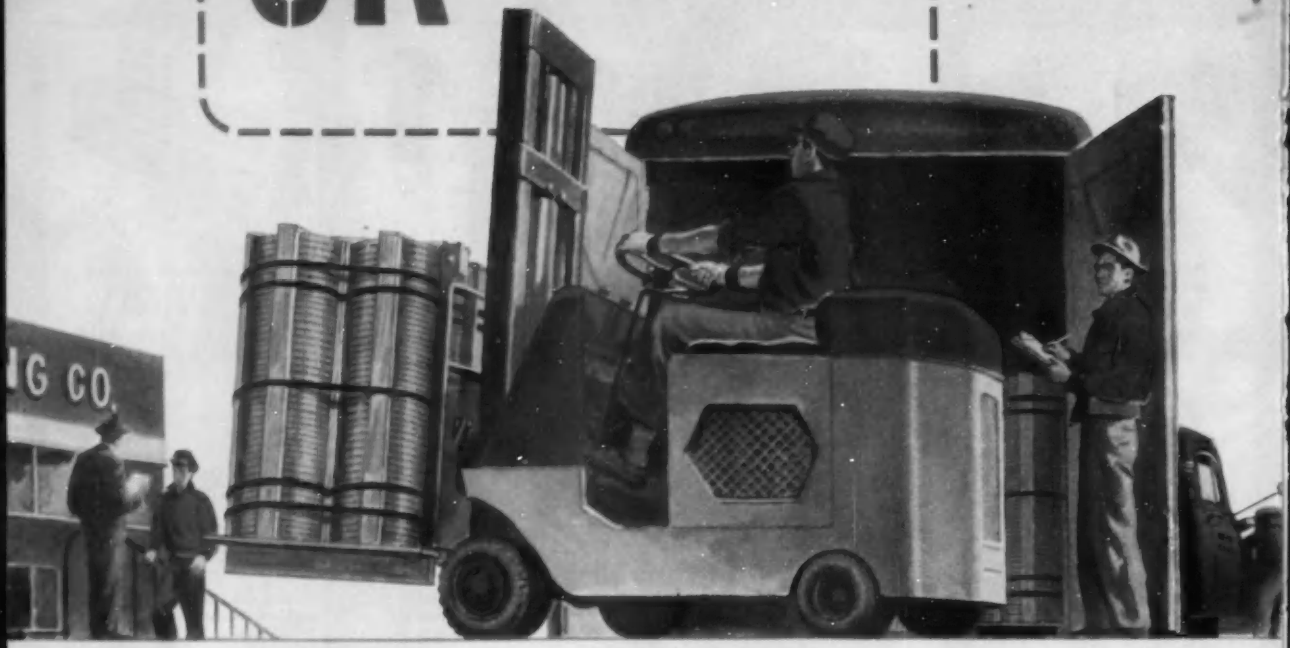
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Using our facilities as *your gear department* puts our entire organization on your team with production-line precision. Gears—constantly to your specifications—arrive on schedule, and you are relieved of the responsibilities of building and maintaining a gear department equal to your requirements in *know-how* and production facilities.

Most of our customers use us in this manner—employing our experience in the solution of gear problems—placing confidence in a company whose sole business is gears, and whose business has been built on living up to both specifications and expectations. May we discuss such a mutually advantageous arrangement with you?

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MODERN MACHINE TOOLS AREN'T AN

Production Pointers from GISHOLT

GISHOLT TIME-SAVING IDEAS



Presented as a service to production men, we hope some of these interesting ideas, chosen from thousands of jobs, will suggest ways to help cut time and costs in your own work.

GISHOLT JETRACER SIMPLIFIES CONTOUR BORING OPERATIONS

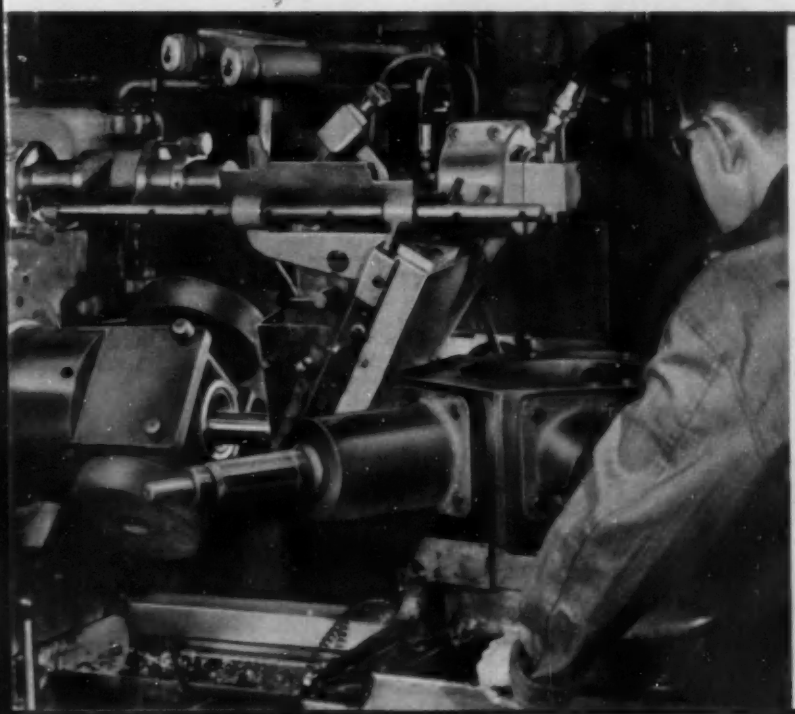
Low-cost Unit Added to Late Model Saddle Type Turret Lathe

How to get still more production and lower costs out of present equipment? Mission Manufacturing Company, Houston, Texas, can show you a good example in the machining of steel valve bodies.

The time and money saver is a hydraulic tracer unit, added to a Gisholt 3L Saddle Type Turret Lathe. Operation of the turret-mounted *JETRACER* is simple. The entire unit, including template, is self-contained and mounted on a single face of the hexagon turret. This in no way restricts use of the overhead pilot bar.

With the Gisholt *JETRACER*, production has been increased 25%. A low-cost, standard, single-point tool replaces expensive special sizing tools. Considerable time is saved on gauging, since only one diameter needs to be checked. Uniform quality is an added advantage automatically achieved, because the chance for human errors is done away with in boring operations.

New ideas pay off handsomely: Increased output plus repetitive accuracy in difficult boring operations result from this turret-mounted Gisholt JETRACER.



◀ Note template and stylus which follows contour for boring operation.

Typical workpieces, rough and finished, handled in this setup. ▼



EXPENSE...THEY'RE MONEY-MAKERS

GISHOLT

TIME-SAVING IDEAS

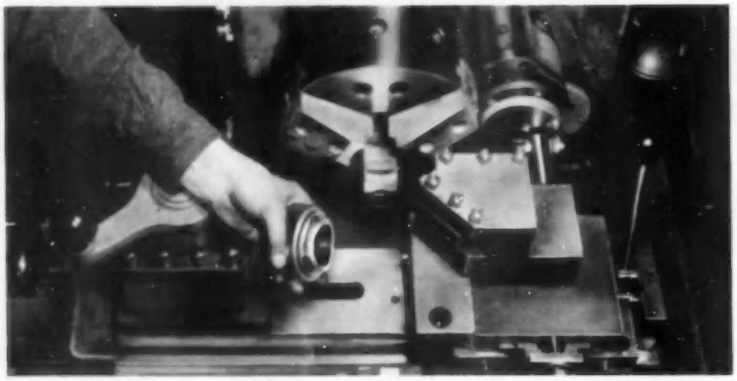
WAVE FACES EASILY GENERATED WITH THIS SLIDING TOOL BLOCK SETUP



Simple Solution to Unusual Job on a Ram Type Turret Lathe

Talk about tricky shapes to generate, look at this lug insert forging. Yet it's easily done with this setup on a Gisholt No. 5 Ram Type Turret Lathe.

This close-up shows sliding tool block arrangement on the No. 5 Ram Type Turret Lathe.



For chucking there is a spring-loaded locator in the spindle for correct radial location on the rib on the back of the part. Tools on the hexagon turret drill, bore, co-bore, rough turn, undercut and chamfer.

The problem surfaces are generated by tools in a special sliding tool block on the rear of the cross-slide. The block is actuated by a cam which rotates in time with the spindle. A spring-loaded roller attached to the sliding tool block follows the contour of the face of the cam, causing tools to perform contour machining on the workpiece.

Expert tooling with sliding tool block arrangement and the use of the right machine give a low 4.3-minute f. t. f. time including this unusual facing job.

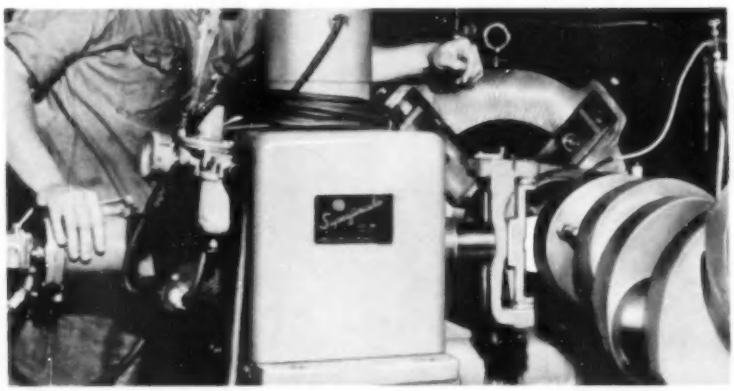
LARGE CRANKSHAFTS SUPERFINISHED WITH LOW-COST LATHE ATTACHMENT

Better Wearing Surfaces Achieved Without Adding Extra Operation

To get the longer bearing life demanded of crankshafts in today's higher speed diesel engines, this manufacturer uses Superfinish...and at a minimum of equipment cost.

The main and crankpin bearings are turned on a lathe to .001-inch tolerance. Then, without removing the crankshaft from the lathe, a Gisholt No. 4 Superfinishing Attachment, which has been substituted for the front tool post, is used to Superfinish these vital surfaces down to 10 micro-inches RMS. The required micro-inch surface finish is produced without an intermediate grinding operation.

You can see the savings in time and equipment by this setup. The quick Superfinishing operation exposes true base metal so that the crankshaft operates on harder, smoother bearing surfaces for a longer trouble-free service life.



With Superfinisher attachment mounted on the lathe, machining and Superfinishing jobs are done in one chucking.

Finer bearing surfaces and improved geometry by Superfinishing make these crankshafts better performing—at less cost than former finishing methods.

Helpful Catalog, recently printed, gives explanation of Superfinish and shows many applications. Write for your copy.

Your New Machine Tools— Cash?...On Time?...Lease?

What's the most practical way for you to obtain new machine tools? You have a choice of several plans... all clearly explained and illustrated with examples in this new bulletin. Ask for your copy of Form P-1175, "What You Should Know About Buying and Renting Machine Tools."



GISHOLT

LOOK AHEAD...KEEP AHEAD...WITH GISHOLT

GISHOLT

TIME-SAVING IDEAS

TIP FOR FAST CHANGEOVERS...

GISHOLT

TIME-SAVING IDEAS

HOW BRAKE DRUM OUTPUT WAS INCREASED 50%

Precision Taper Boring Extra Benefit of Fastermatic Automatic Turret Lathe

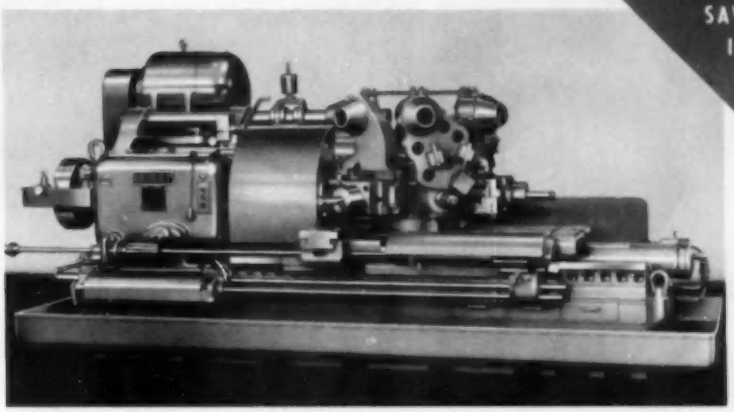
Greater output and greater precision were the objectives when refiguring this job...machining road grader brake drums.

The job is now handled on a Gisholt 4F Fastermatic Automatic Turret Lathe. This is equipped with special jaws to compensate for uneven chucking surfaces and hold the drum rigidly for the multiple cuts.

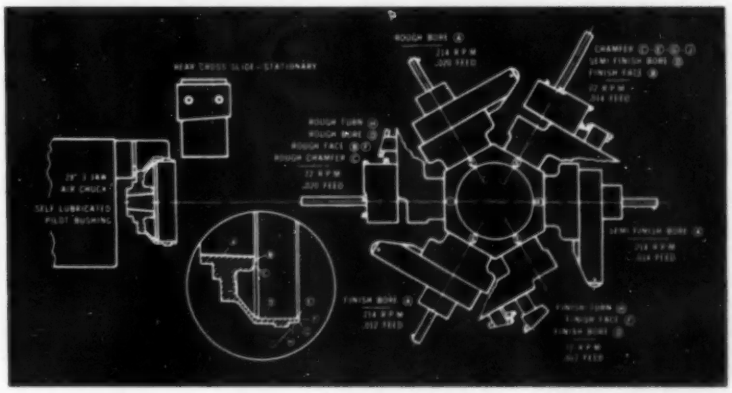
Taper boring (A) is done with a boring bar and cutter mounted in a turret facing slide tool. Three of these slide tools are used with a special cam block mounted on the stationary rear cross-slide which guides the spring-loaded slide tools along the taper angle of the bore. Result is precision gauge fit every time. These slide tools are alternated on the turret with other standard tools which bore, face, chamfer, and turn other sections of the drum.

The large parts are completed in 23.1 minutes—a 50% reduction in f.t.f. time of the former method.

The Fastermatic has the right combination of rigidity, accuracy and automatic features to provide important time- and labor-savings on this job.



Gisholt 4F Fastermatic Automatic Turret Lathe



EASIER CALIBRATION SPEEDS BALANCING OPERATION

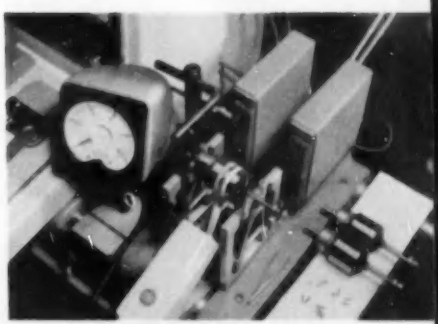
Amount of Required Correction Directly Indicated on Gisholt DYNETRIC Balancers

Production balancing of universal motor armatures is generally at a rate of 125 parts per hour, including measurement, correction and inspection. Fast, accurate, easy-to-operate equipment is a necessity.

This manufacturer uses a Gisholt OSB Bench Balancer to dynamically balance every armature. Six different sizes of extruded aluminum strip are used to correct for balance. The direct reading amount meter, calibrated so that one unit represents the smallest strip, quickly indicates which of the six sizes must be used to produce balance.

It takes only 15 seconds in this case to determine accurately which strips are to be used and the positions in which they are to be placed at each end of the armature. Can you imagine anything easier?

Gisholt Balancing Machines offer many fine features which add up to quick, accurate, low-cost balancing operations. Ask for your copy of new general balancing catalog, No. 1109-A.



DYNETRIC BALANCERS GISHOLT

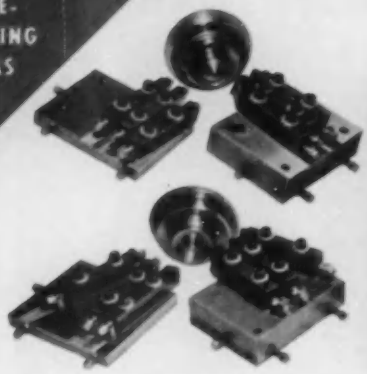
GISHOLT

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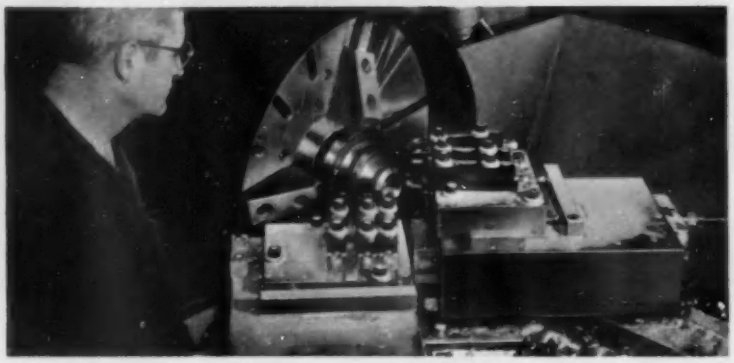
TIME-SAVING IDEAS

TIP FOR FAST CHANGEOVERS... PRE-SET TOOLING LIKE THIS

How a little extra planning saves a lot of money —with the Gisholt Simplimatic Automatic Lathe



(Right) Tooling for one type cutter bit. Photos above show pre-set tooling for two other types.



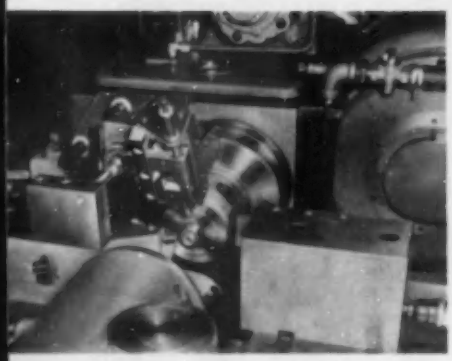
Here three different types of steel oil well cutter bits, each in two sizes, must be handled. Good reason for carefully planning changeover.

The solution is nicely provided by a Gisholt Simplimatic Lathe and pre-set tooling. Each type of cutter bit has its own tooling which is set before being mounted on the tool slides. Special tool bits are bolted in milled slots on steel spacer plates. These are then mounted on the slides. The Simplimatic's front and rear slides have swivel bases to facilitate correct angular adjustment. Time for workpieces shown in photos is only 2.40 minutes.

Changeover with pre-set tooling on the Simplimatic saves time in handling these six different workpieces.

SPECIAL TOOLING COMBINES TWO OPERATIONS IN ONE CHUCKING

No. 12 Hydraulic Lathe Uses Auxiliary Slide to Form Grinding Relief



Headstock-mounted slide feeds tool at 45 degree angle to form grinding relief. (tailstock retracted to show tooling)

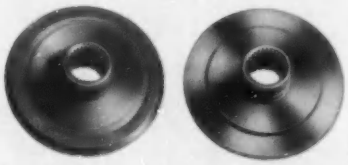
How to finish these steel turbine converter hub forgings in one chucking with a minimum of special tooling?

First, the work is chucked in the splined I.D. on a special splined mandrel, the end of which rotates slightly off-center to grip and drive the part. A tailstock provides additional support.

Tooling on the front carriage and rear independent slide finish turns the two hub diameters, finish faces the flange and sizes the pilot diameter. Since the front carriage and rear slide are used for standard machining operations, they are not available for forming the grinding relief between the hub diameter and its adjacent face. Instead, a headstock-mounted auxiliary slide is used. Movement of the front carriage actuates this slide which feeds in at a 45 degree angle to form the grinding relief.

Floor to floor time is only .4 minute with the auxiliary slide permitting the part to be finished in one chucking.

An extra operation is saved by this relatively simple auxiliary slide arrangement on the No. 12 Hydraulic Automatic Lathe.



Rough and finished workpieces showing surfaces machined in this operation

No. 3-455

635

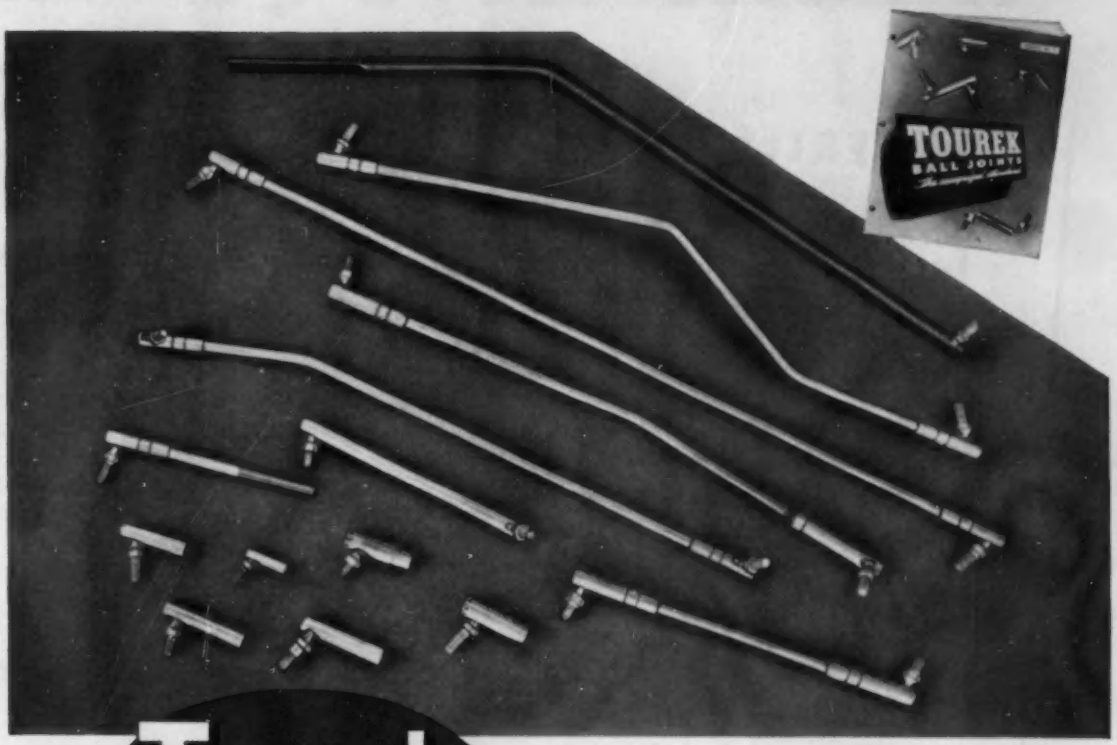
THE GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

GISHOLT MACHINE COMPANY — Madison 10, Wisconsin

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GET THIS *Free* 16-PAGE BALL JOINT GUIDE!

This attractively printed 16-page TOUREK Ball Joint Guide-Catalog will be mailed to you without cost or obligation. It contains pictures, diagrams, cross sections, tables, ideas, suggestions and other technical data especially designed to help YOU specify exactly the right Ball Joints for your specific applications. Send for your copy today!



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EXTREME UNIFORM ACCURACY IN SCREW MACHINE PRODUCTS

STEP UP PRODUCTION WITH *Better* BALL JOINTS

Extreme uniform accuracy in mass-producing Ball Joints has been a specialty of ours for more than 34 years. This UNIFORM precision of every operation in production runs of hundreds or thousands has cut assembly time, improved performance and brought peace of mind to many quality-minded manufacturers from coast-to-coast!

More and more critical buyers "turn to TOUREK" *consistently* for finer quality in Screw Machine Products too.

TOUREK's wide engineering experience and large production facilities can be depended upon implicitly for the kind of service and cooperation you need. Send for the free 16-page Guide pictured above. Or, ask us now for ideas, suggestions and estimates on the next job in which Ball Joints or Screw Machine Products are involved.

J. J. TOUREK MFG. CO.

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. . UP TO 2-5/8" DIAMETER SINGLE AND MULTIPLE SPINDLE MACHINES . . THREADING • TAPPING • MILLING • DRILLING • GRINDING • POLISHING • PLATING • HEAT TREATING • SILVER SOLDERING •

WORLD'S LARGEST MANUFACTURER OF BALL JOINTS

HANNIFIN SQUARE

SERIES "A" AIR CYLINDERS

Made in 11 bore sizes from 1½" to 14"... 13 standard mountings... many combinations. Extremely close tolerances insure accurate, easy mounting. Steel heads. Cylinders of hard-drawn, high strength brass honed to a satin finish. Piston rods ground and polished then hard chrome plated for extreme smoothness as well as corrosion resistance.

TYPICAL MOUNTING STYLES





WRITE FOR BULLETIN 213

Just off the press. The easiest catalog to use in the cylinder business. Write today.

HANNIFIN AIR CONTROLS

Hannifin has the most complete line of air control valves. Exclusive designs, many types, for hand, foot, cam or solenoid control of air cylinders, presses, and other air-operated equipment. Ask for recommendations.



P-M PILOT-MASTER VALVES

The P-M line provides faster, easier operation for the simplest to the most complicated air-operated circuit. 2-Way, 3-Way and 4-Way Master Valves and Solenoid Pilot-Master Valves... also direct operated 3-Way and 4-Way valves with a wide choice of operating heads.



DISC-TYPE VALVES

Bronze discs lapped to perfect seal with seats. Puckless design. For hand, foot or electrical operation.

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The complete air controls catalog! Write for your copy today.



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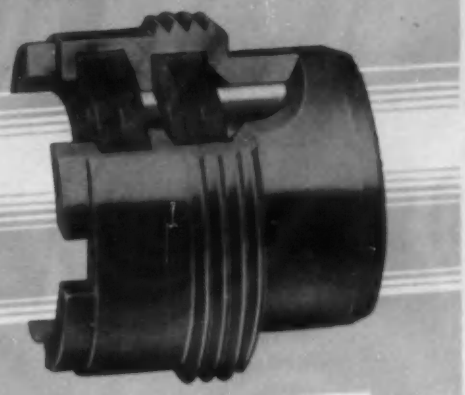
Hannifin Corporation, 543 South Wolf Road, Des Plaines, Illinois

Air and Hydraulic Cylinders • Hydraulic Power Units • Pneumatic and Hydraulic Presses • Air Control Valves

TYPE CYLINDERS

BOTH WITH NEW, CARTRIDGE GLAND

...externally removable and replaceable without dismantling cylinder!



Here's the biggest improvement in cylinder design in the last 50 years. This exclusive Hannifin gland is a bronze cartridge, externally removable and replaceable as a unit to meet J.I.C. recommendations. A face type spanner wrench is the only tool you need. Now look at the packing! The "Wiperseal" serves a dual purpose as it wipes both ways to provide a dry rod on the out-stroke, a dirt-free rod on the in-stroke. The "Lipseal" is self-compensating, self-relieving and non-adjustable... provides an efficient seal throughout its long life. Ask for a demonstration... every Hannifin man carries a cutaway sample of this "jewel" of a gland with him at all times.

SERIES "H" HYDRAULIC CYLINDERS

Made in 9 bore sizes from 1½" to 8"... 13 standard mountings... many combination mountings. Extremely close tolerances for easy mounting. Heavy-duty tie rods. Steel heads. Steel cylinder bodies "Tru-Bored" and honed to a satin finish. Piston rods ground and polished then hard chrome plated for minimum friction and long packing life.

TYPICAL MOUNTING STYLES





WRITE FOR BULLETIN 113

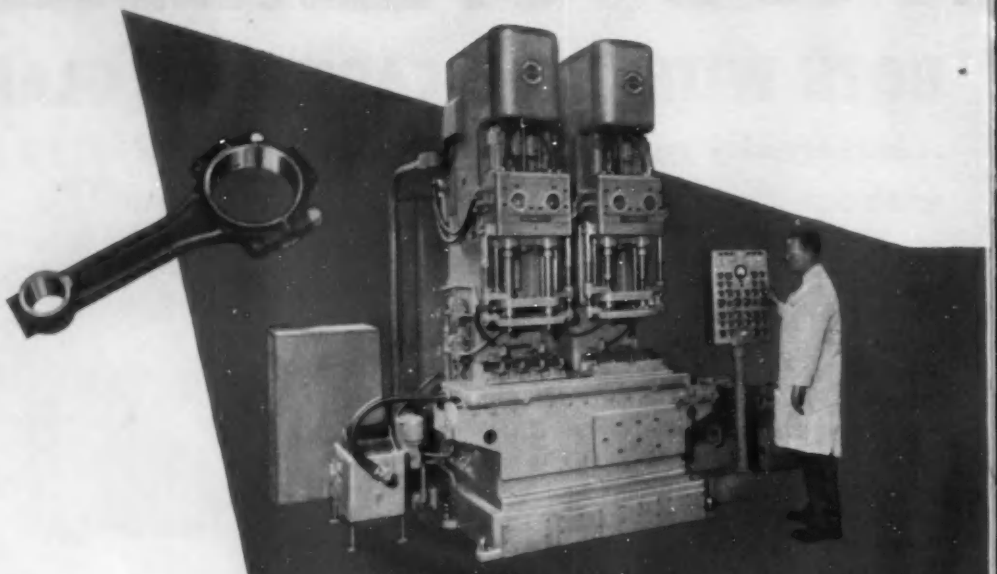
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the Automotive Industry uses.....



BARNESDRILL Model 223-4 Honing Machine with paired, 2-spindle heads produces 540 connecting rods per hour with a 20 to 30 R.M.S. finish. Bore size: 2.1247" — 2.1252" x 29/32".

HONING...

HONING EQUIPMENT FEATURES

Plugmatic Sizing

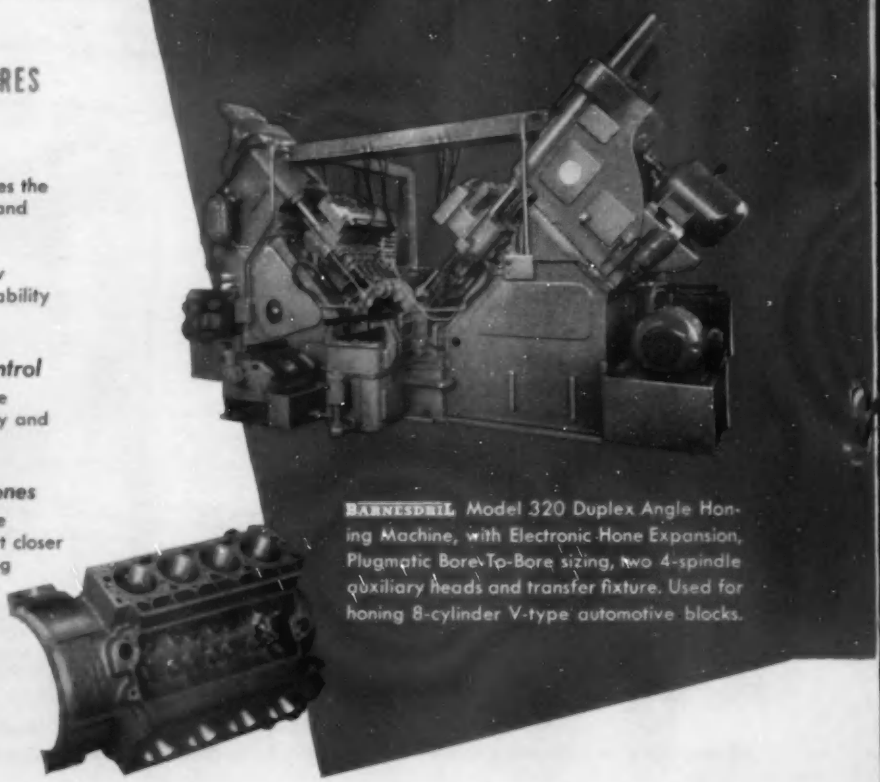
The Plugmatic gauging member sizes the bore being honed. Is self-aligning and not affected by misalignment or eccentric stone wear. Guarantees bore-to-bore accuracy within a few "tenths" and complete interchangeability of parts.

Electronic Hone Expansion Control

Operates automatically to keep the honing operation at peak efficiency and compensate for stone wear.

"Extra-Deep" Plas-T-Clad Stones

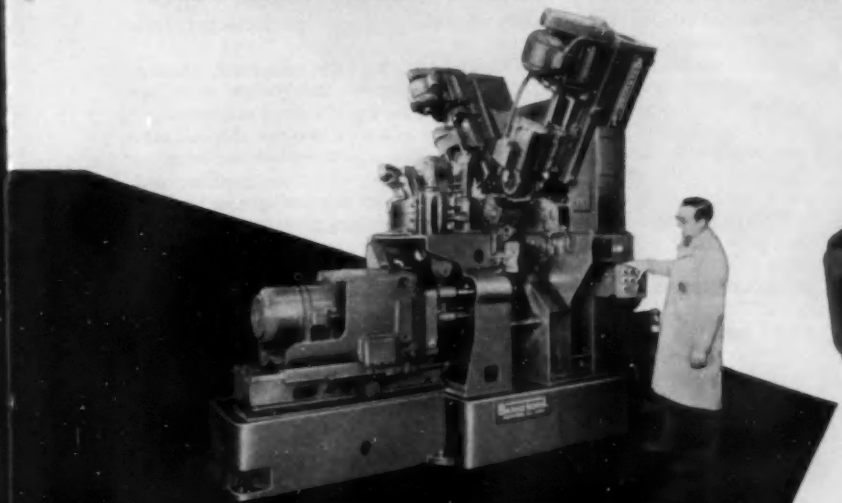
Provide 200 to 500% more usable abrasive and more positive support closer to the cutting edge . . . freer cutting action. Longer abrasive life means less down-time.

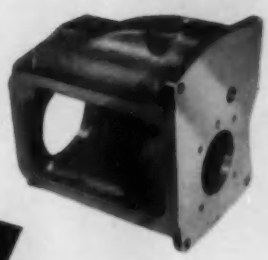


BARNESDRILL Model 320 Duplex Angle Honing Machine, with Electronic Hone Expansion, Plugmatic Bore-To-Bore sizing, two 4-spindle auxiliary heads and transfer fixture. Used for honing 8-cylinder V-type automotive blocks.

BARNESDRIL

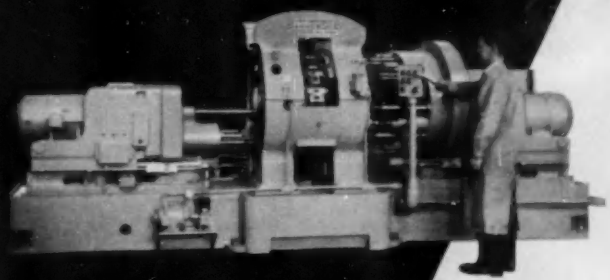
MACHINES FOR HIGH PRODUCTION





BARNESDRIL Special Hydraulic Unit Type Machine for drilling, chamfering, reaming, facing and tapping cast-iron transmission cases.

MULTIPLE UNIT OPERATIONS



BARNESDRIL Special Drum Type Unit Machine, arranged with 12-station drum, one 25-spindle auxiliary head on one unit and 5-spindle auxiliary head on the other unit. Has fixtures for holding oil pump body for a series of 22 different operations. Output: 90 pieces per hour at 80% efficiency.

UNIT-MACHINE FEATURES

Flexibility

Production unit-machining offers flexibility on high runs of identical pieces . . . or, several different pieces at the same time.

Variety

A wide variety of machining operations can be performed in sequence, including drilling, reaming, counterboring, spot-facing, tapping and milling.

Automatic Cycling

Barnesdril engineers will arrange almost any number of operations into a single automatic cycle to provide the required output at the lowest possible unit-cost . . . with constant duplication assured at all times.

BARNES DRILL CO.

850 CHESTNUT STREET • ROCKFORD, ILLINOIS



Here's a bolt whose weakness is its strength!

Making a bolt that fails precisely when it should requires specialized manufacturing skills.

This is the job New Holland Machine Company, farm equipment manufacturers, turned over to RB&W. The bolt is used on the flywheel of a New Holland baler. "Critical" is a weak word for its importance to the baler.

If the baler picks up a foreign object such as a rock or stone, this bolt *must* snap to prevent gear breakage. But it can't fail too soon—when the baler eats up extra-heavy windrows, for example. If it failed every time this happened, the farmer would spend all day replacing bolts — instead of making hay.

RB&W worked hand-in-glove with New Holland engineers in the tough job of heat-treating a standard machine bolt to these exacting specifications. It took a lot of ingenuity — but paid off. You can expect the same kind of service, cooperation and end product when you drop your fastener problem in our hopper. RUSSELL, BURDSALL & WARD BOLT AND NUT CO., Port Chester, N.Y.



UP TO TWELVE TONS OF HAY AN HOUR is the capacity of New Holland's Super 77 power take-off baler. With every minute vital in harvesting, farmers can't take chances on machinery failure — so New Holland built rugged parts into the Super 77, gave it extra-large capacity for fast, reliable operation.

RB&W **RUSSELL, BURDSALL & WARD**

110 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

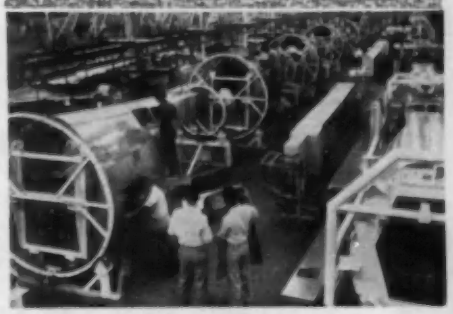
Plants at: PORT CHESTER, N.Y.; CORAOPOLIS, PA.; ROCK FALLS, ILL.; LOS ANGELES, CALIF. *Additional sales offices at:* ARDMORE (PHILA.), PA.; PITTSBURGH; DETROIT; CHICAGO; DALLAS; SAN FRANCISCO. *Sales agents at:* NEW ORLEANS, DENVER, SEATTLE. *Distributors from coast to coast.*



Still another weapon from the spirit world...

McDONNELL SPEEDS ***DEMON*** PRODUCTION WITH A SUB-CONTRACT TO **TEMCO.**

First the *Phantom*, then the *Banshee*, now the *Demon* — and soon the *Voodoo*. If the names of McDonnell's sleek fighters aren't enough to haunt aggressors' dreams, their performance certainly will. The Navy, with twin-jet Banshee squadrons already in operation, saw the new F3H *Demon* design... liked it... wanted some quick. McDonnell sped the job by sharing the responsibility with TEMCO, giving sub-contracts for aft fuselages, inner and outer wings, flaps, and other components totaling 35 per cent of the airframe. McDonnell thus joined Boeing, Convair, Lockheed, Martin, and Republic — all of whom have found that TEMCO delivers a quality product, on schedule, at the lowest possible cost.



F3H aft fuselage sections on rotating circular jigs move down TEMCO-Dallas assembly lines. Elsewhere in the Dallas plant, a twin line is devoted to inner wings, while outer wings take shape at TEMCO's Garland plant.

ENGINEERS... If you are interested in a position with a growing weapon systems organization, write full particulars to E. J. Horton, Jr., Engineering Personnel, TEMCO Aircraft Corporation, P. O. Box 6191, Dallas 2, Texas.

TEMCO AIRCRAFT CORPORATION
DALLAS, TEXAS

wanted: more

Management men are discovering the tremendous production gains and cost savings that result from uninterrupted operation of an entire stamping line. Since Danly Presses offer *maximum freedom from mechanical failure*, lines composed entirely of Danly Presses can produce more finished stampings per shift without work stoppage, without high maintenance costs in time and labor.

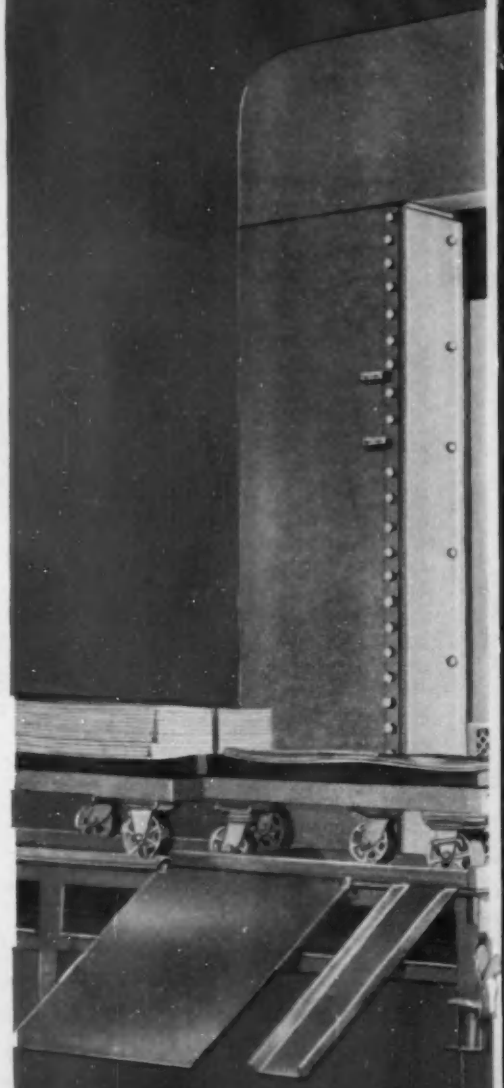
Danly Press lines actually turn out more finished stampings per hour, too. Danly Drawing Presses, pace-setters for the line, are designed with a special slide motion that doubles stroking rate without exceeding safe drawing speed. Output from these Danly Drawing Presses keeps the whole line working at full capacity.

Now—why are Danly Presses able to provide such remarkable advantages? For the most part, it's due to Danly's special design and heavier construction. Pressurized *oil* lubrication reduces maintenance by hundreds of hours every year. Heavier, more rugged construction meets day in and day out peak-load requirements. Danly's cool-running clutch and brake wear less . . . run longer before replacement. Simplified electrical and pneumatic control devices increase both operator and machine safety.

Because press downtime losses affect *your* entire production setup, it will pay to have a Danly Press engineer give you the complete story on how to lick this problem. Write or phone today.

DANLY MACHINE SPECIALTIES, INC.
2100 South Laramie Avenue, Chicago 50, Illinois

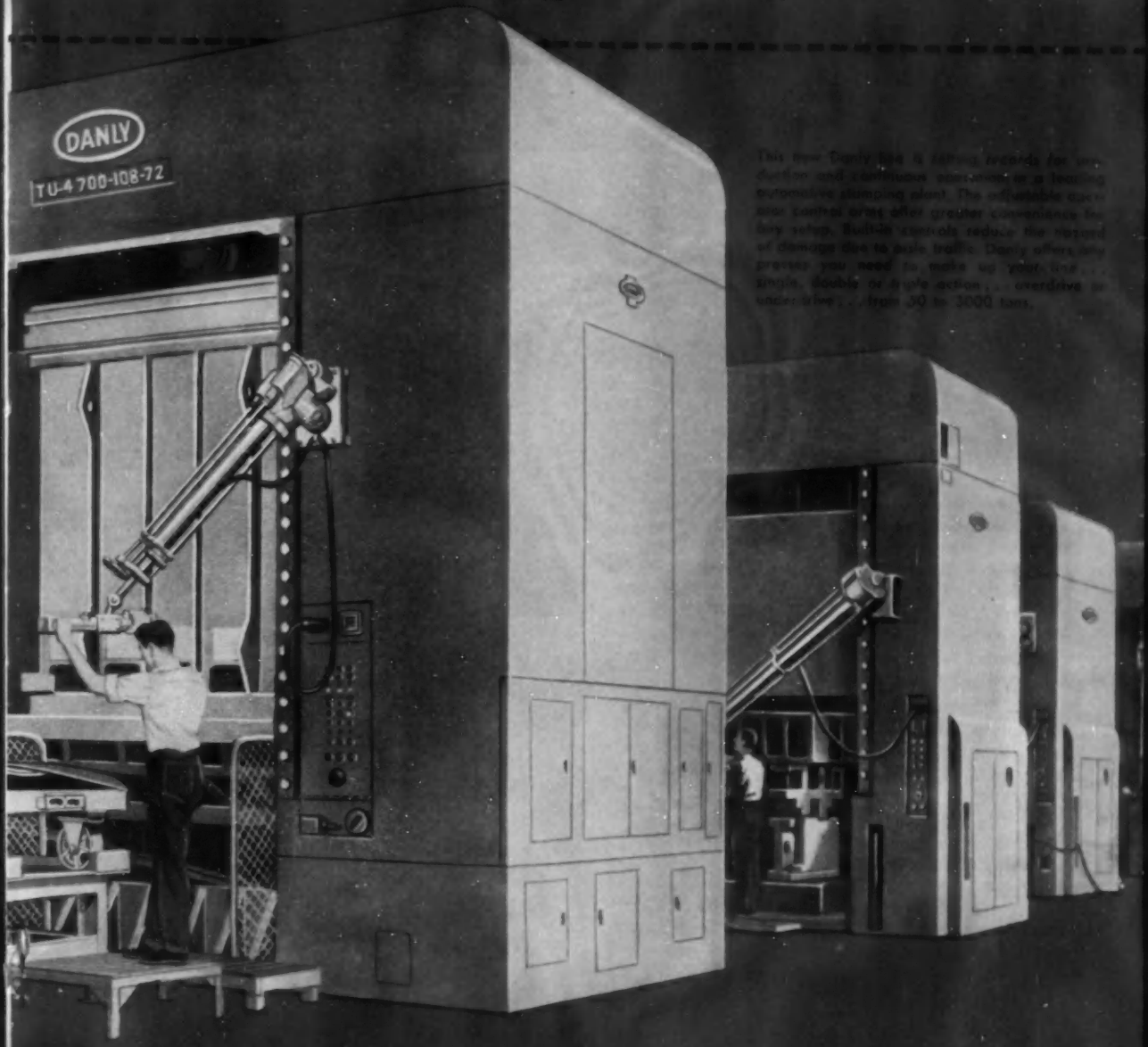
DANLY®
HYDRAULIC METALWORKING EQUIPMENT
MECHANICAL PRESSES 50 TO 3000 TONS



It costs less to run a DANLY PRESS line!

specify: A NEW

finished stampings per shift



This new Danly line is setting records for production and consistent operation in a leading automotive stamping plant. The adjustable operator control area offer greater convenience to every setup. Built-in controls reduce the hazard of damage due to auto traffic. Danly offers any process you need to make up your line . . . single, double or triple action . . . overdrive or underdrive . . . from 30 to 3000 tons.

DANLY PRESS LINE



Jacobsen

JOHN DEERE
QUALITY FARM EQUIPMENT

KOHLER OF KOHLER

We are proud to be judged by the company we keep!

Studebaker

WAUKESHA

TRACTOMOTIVE

CLINTON

Nash

WISCONSIN MOTOR CORPORATION

CHRYSLER

WESTINGHOUSE

MM
MINNEAPOLIS MOLINE
MODERN MACHINERY

Cushman

ALLIS-CHALMERS

Since our earliest days as a pioneer manufacturer of oil bath air cleaners and other automotive specialties, United Specialties Company has been associated with honored and famous names in industry. We are proud to list among our air cleaner customers passenger car and truck manufacturers like Ford, Chrysler, American Motors, Studebaker, Diamond T, Federal, Mack and White — farm and construction equipment firms such as Allis-Chalmers, International Harvester, John Deere, Minneapolis-Moline and Case — gasoline engine manufacturers like Wisconsin Motors, Lauson, Clinton and Jacobsen.

Our Mitchell Division in Philadelphia furnishes leading manufacturers with a wide variety of products. These range from automotive units, such as turn signal switches and dovetails, to television components.

Our three plants in Chicago, Philadelphia and Birmingham are equipped with modern metal working machinery geared to today's production requirements. We invite your inquiry on oil bath air cleaner designs and automotive components. We also stand ready to serve you in the production of metal stampings, rolled and spun shapes. May we add your name to the good company we keep?

UNITED SPECIALTIES COMPANY

Chicago 28 • Philadelphia 36 • Birmingham 11

GRAVELY

RCA

IH

YALE

fmc

Ford

DIAMOND



New rectangular-type diesel oil bath air cleaner for tractor and truck installations.



Mitchell clamp-on and screw-type, semi-automatic turn signal switch used in cars, trucks, buses.



Plastic oil bath air cleaner for small engines. Cleaning action visible to user.



This air cleaner protects diesel engines in truck, tractor and industrial power units.



Popular-style truck air cleaner mounted directly on air horn of down draft carburetor.



Here is another new United oil bath air cleaner. This unit with curved air intake pipe fits alongside the carburetor in order to meet limited underhood space requirements.



Gasoline engines used on combines and other agricultural implements are protected by this dual unit — a combination pre-cleaner and air cleaner for excessive dust conditions.



Conventional-type Mitchell ignition switch used on popular makes of cars and trucks.



Television picture tube spun-metal shell. Available in 16-inch round and 17-inch, 21-inch and 27-inch rectangular models.



This new air cleaner is designed for dual carburetors. A fixed fitting fastens over one carburetor intake — an eccentric fitting fastens over the other. This compensates for any variation in tolerances — provides a perfect fit.

THE "Jet" OF FREE-MACHINING STEELS



. . . . . B & L LEDLOY
COLD FINISHED LEADED BARS

CASE HISTORY OF A LEDLOY VALVE PART



In fabricating this Vernatherm element from 1-15/16" Rd., several types of steel were tried from B-1113 to C-1144. On Bessemer, rejections ran as high as 35% due to cracks developing in forming the rim. Use of C-1137 to C-1144 overcame this, but machine time jumped to 56 seconds per piece. By changing to B&L LEDLOY "A", time per piece reduced to 26 seconds, with increased speeds from 200 SFM for B-1113 to 285 SFM for LEDLOY. Tool life increased; rejections eliminated. Finished part tested 4600 psi without permanent set.

This Super-Machining Lead-Bearing Steel has been developed to give maximum cutting speeds and feeds on modern high-speed automatics.

B&L mills produce quality Cold Finished Bars in LEDLOY Grade "A" and "B" as well as plain carbon grades and special alloy steels. You will find these are time-saving substitutes for either Bessemer or Open-Hearth Screw Stocks and that they offer big advantages over similar non-leaded steels.

Many users of B&L LEDLOY Bar Steels report these outstanding results: Production increases of 50% to 90% without sacrifice of quality . . . Time savings of 33% to 55% in fabricating unit parts . . . Longer tool life . . . Minimum rejections . . . Improved finish . . . and excellent mechanical properties.

Production-wise B&L LEDLOY Bar Steels give you a wide leverage in cutting the costs of machine products. Try an order of B&L LEDLOY on your next important machining job.

BLISS & LAUGHLIN, INC.

GENERAL OFFICES: HARVEY, ILLINOIS

SALES OFFICES IN ALL PRINCIPAL CITIES

FOUR PLANTS:—


HARVEY, ILL.

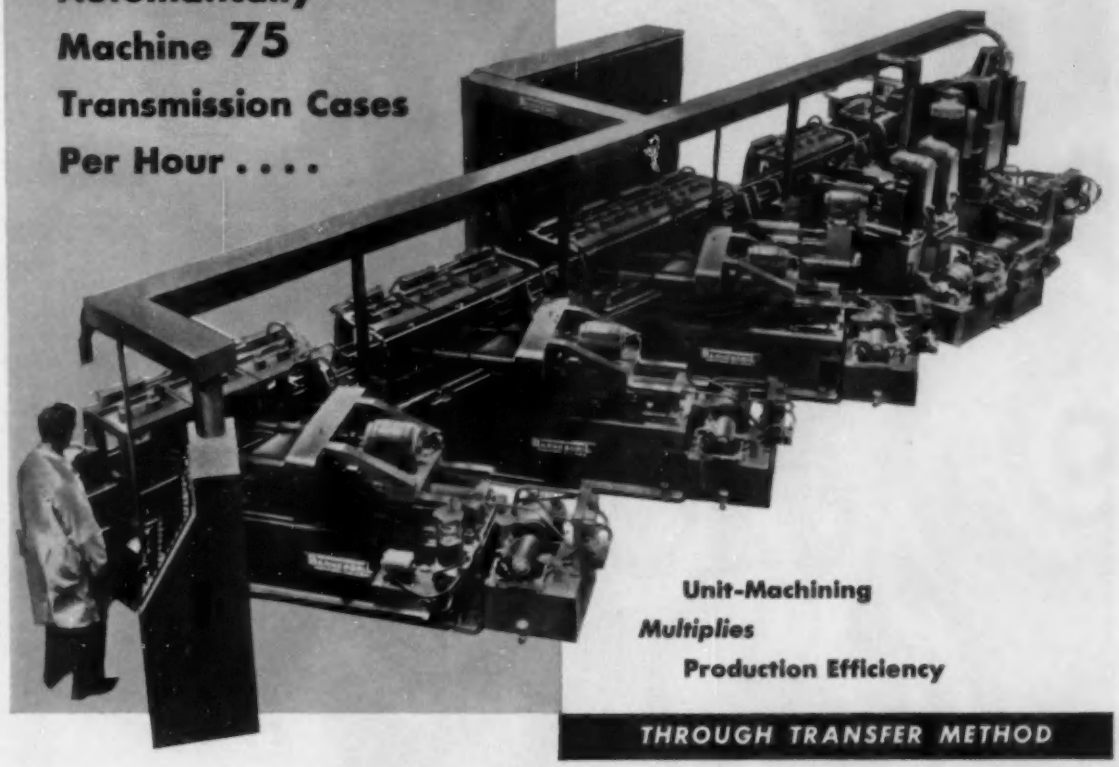

DETROIT, MICH.


BUFFALO, N. Y.


MANSFIELD, MASS.

BARNESDRIL TRANSFER MACHINES

Automatically Machine 75 Transmission Cases Per Hour . . . .



Unit-Machining *Multiplies* Production Efficiency

THROUGH TRANSFER METHOD

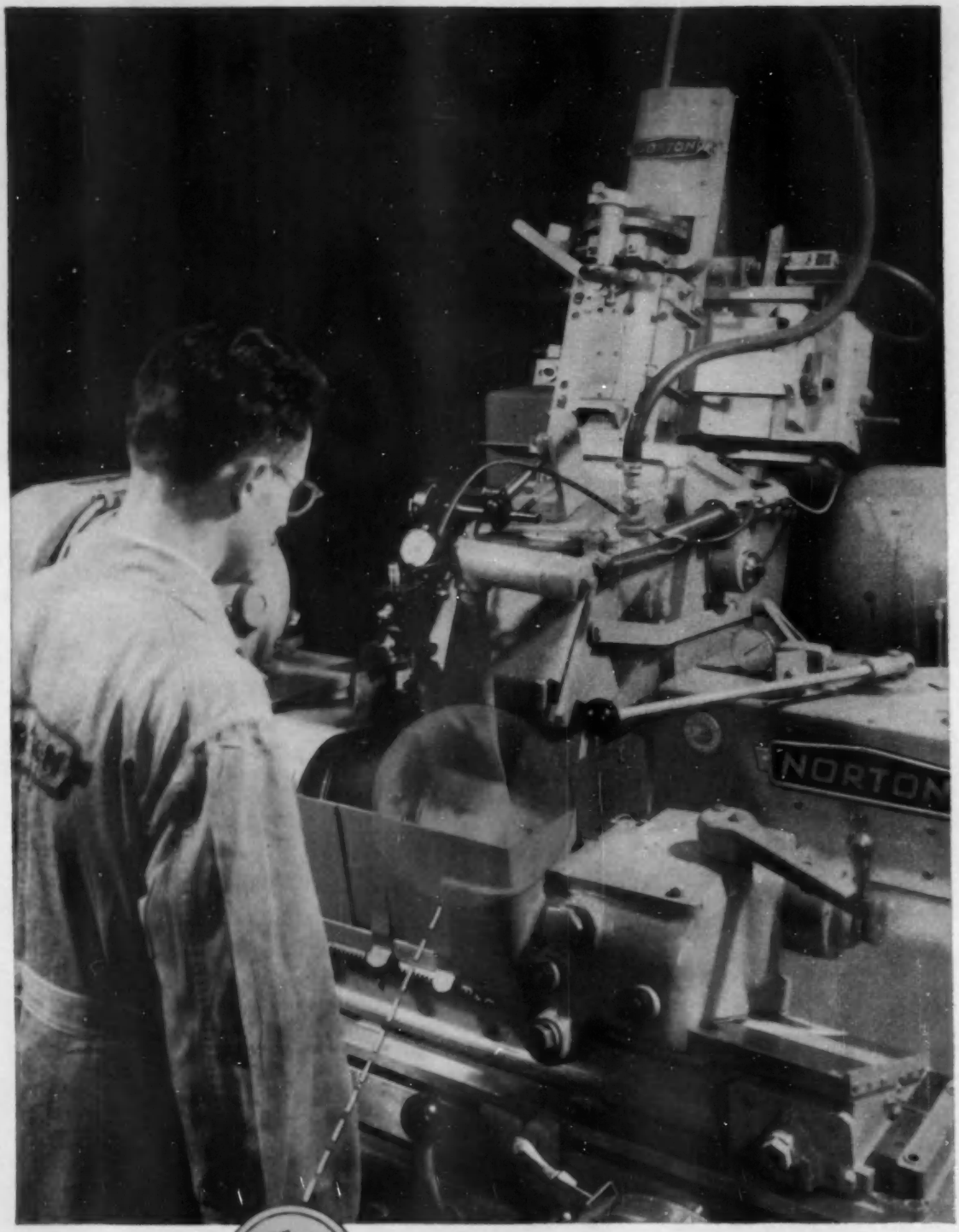
This modern high production machine is one of a battery of twelve machines built by **BARNESDRIL** engineers for one plant to process a complete line of similar parts. Production is 75 complete cases per hour at 70% efficiency, drilling, reaming, counterboring and milling. Automatic oiling system and chip conveyor are standard features.

Ask **BARNESDRIL** Engineers for estimates on your multiple-operation parts. They can suggest methods for high machining efficiency at minimum cost.

HOLE BARNESDRIL FINISHING

BARNES DRILL CO.

850 CHESTNUT STREET • ROCKFORD, ILLINOIS



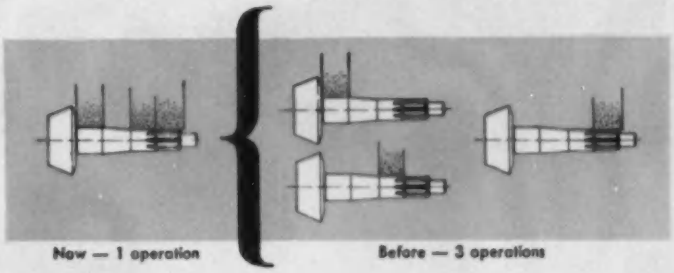
Up 128%

A big step forward in grinding operations, this Norton 10" Type CTU Semiautomatic Grinding Machine includes many advanced features. For example, the multi-wheel mount and automatic wheel guard type truing device help to cut time, and labor costs.

Now!...production increased 128% with this 3-way

PROFIT-BOOSTING Grinding Machine

A single Norton 10" CTU Semiautomatic replaces 3 separate grinders...cuts time, labor, costs



Here's an actual grinding job that shows clearly how advanced grinding techniques can reduce capital investment and step up production to new, profit-boosting highs.

THE PROBLEM. In producing an automotive part, a manufacturer was performing three separate grinding operations. Seeking to better his rate of 35 complete parts per hour per machine, he put his problem up to Norton engineers. They recommended replacing his three old-type machines with a single Norton 10" Type CTU Semiautomatic Grinder with multi-wheel mount and automatic truing device.

THE PAYOFF. Results were real eye-openers. The new Norton Grinder accurately performs all three operations at once . . . and produces 80 parts per hour for a rate increase of 128%!

Many examples of savings

That's just one of many instances of how Norton grinders and lappers assure savings in time, labor and money. There are many others. For example, another 10" Type CTU upped production from 300 to 600 parts per hour, replacing two old-type machines. And a 6" Type CTU more than doubled production of a part that previously required two separate grinding operations.

Why not add these advantages to your own production? Remember: only Norton offers you such long experience in both grinding wheels and machines to help you produce more at lower cost.

For complete information, see your Norton Representative or write us direct. NORTON COMPANY, Machine Division, Worcester 6, Mass. *In Canada:* J. H. Ryder Machinery Co., Ltd., Toronto 5.

To Economize, Modernize With NEW

NORTON

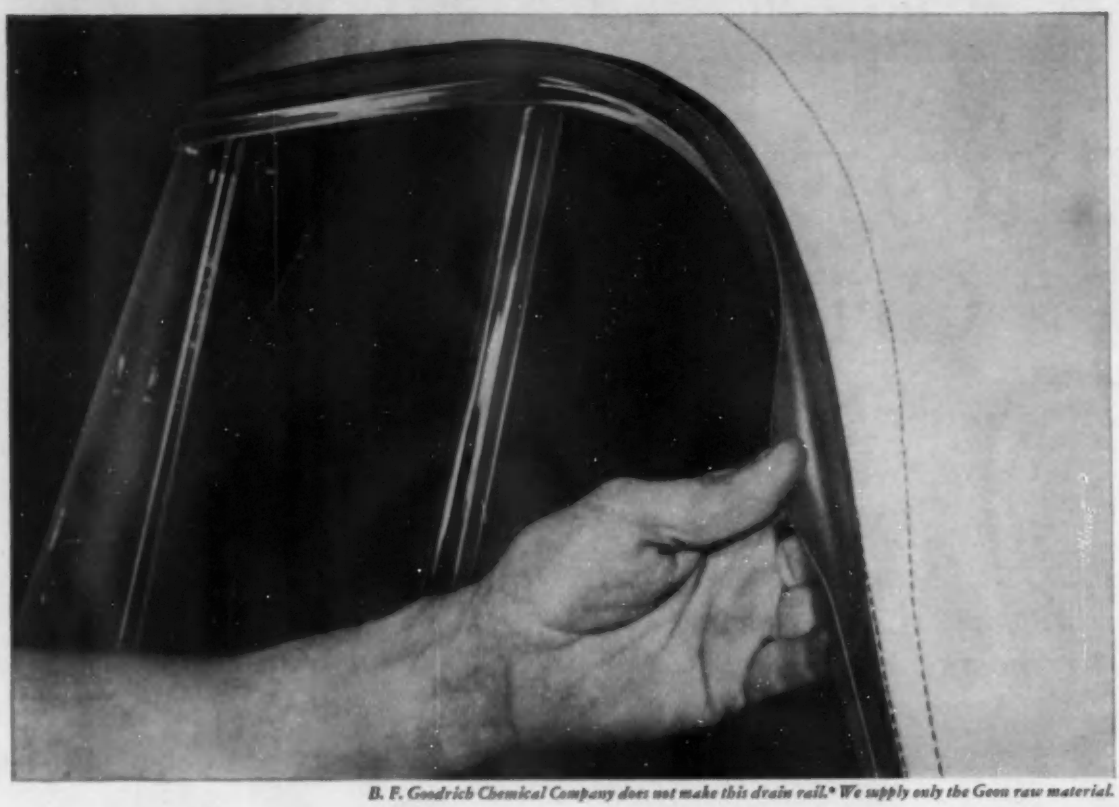
GRINDERS and LAPPERS

Making better products . . . to make other products better

District Sales Offices: Hartford • New York • Cleveland • Chicago • Detroit

Another new development using

B. F. Goodrich Chemical *raw materials*



B. F. Goodrich Chemical Company does not make this drain rail. We supply only the Geon raw material.*

Plastic Rain-Catcher for Convertible Tops!

HERE'S a new product that makes convertible owners happy—a drain rail* extruded from Geon vinyl plastic that keeps rain from dripping inside the car.

Easily sewed around the outside of the convertible top, the drain rail carries rain past the windows to the rear of the car. The windows can be rolled down without the annoyance of water dripping inside.

Geon is ideal for this "rain catching" rail because it won't freeze, crack, chip or peel and is easy to keep clean. It prevents "wicking", or the soaking of water into the fabric along the window tops. The manufacturer supplies this drain rail to many custom top makers.

Geon vinyl materials have helped make many sales successes—from rigid sheeting and tubing to sponge, durable upholstery, permanent window screening, Underwriters' approved electrical insulation and many more products for industry and the home. We'll help you select the Geon material best suited to your product development or improvement plans. For technical information, please write Dept. BA-2, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

*Patent Pending



GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable.

GEON polyvinyl materials • HYCAR American rubber and latex • GOOD-RITE chemicals and plasticizers • HARMON colors

SUPERIOR

STAINLESS STRIP STEEL



the beauty-bright trim

that's solid clear through

that cleans with a wipe

that never needs care

that sells in the store

and serves in the home

SUPERIOR Stainless Strip Steel is available in a range of grades, with dimensions, tempers and finishes to meet your requirements. Write for details.

Superior Steel
CORPORATION
CARNEGIE PENNSYLVANIA



The crankshaft in the modern V-8 engine requires the ultimate in forging technique. Today's high compression engines, with continually increasing horsepower, further emphasize the importance of forging quality.

Wyman-Gordon technical know-how assures quality essential for maximum physical properties, uniform machinability and balance control . . . crankshaft forging specialists since the introduction of the internal combustion engine.

WYMAN-GORDON

Established 1883

FORGINGS OF ALUMINUM • MAGNESIUM • STEEL • TITANIUM

WORCESTER, MASSACHUSETTS

HARVEY, ILLINOIS DETROIT, MICHIGAN



Wide range of models

NEW BRITAIN +GF+

COPY TURNING MACHINE



Changed over in minutes, using simple template, or prototype.

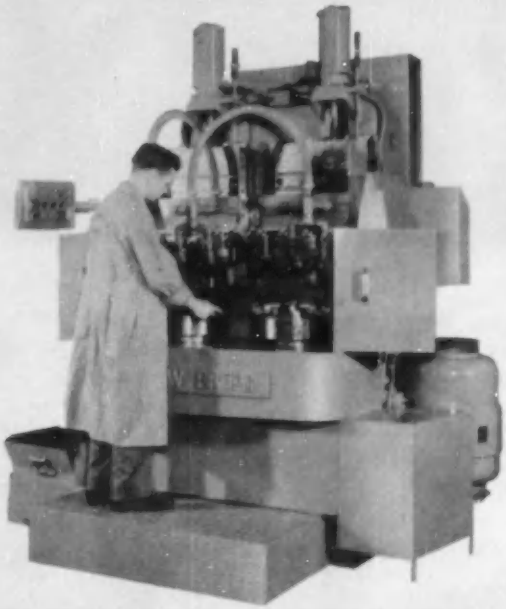
Created specifically for profitable copy turning and boring. Ask your New Britain representative for a showing of the color motion picture "A NEW APPROACH TO COPY TURNING" in your own plant. Or write The New Britain Machine Co., New Britain, Conn.

Economical for short or production runs.

See the following four pages for other New Britain *New's*.

New Approach to Precision Boring

It's cam actuated • It's vertical • It's New Britain

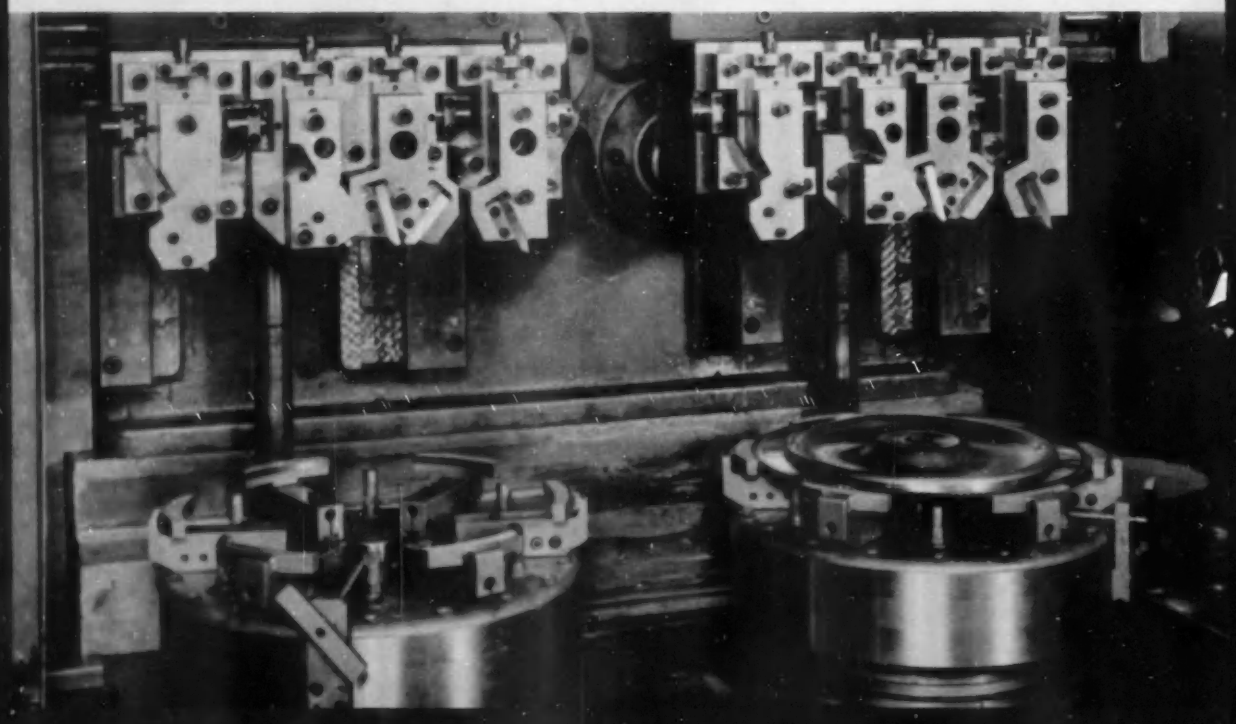


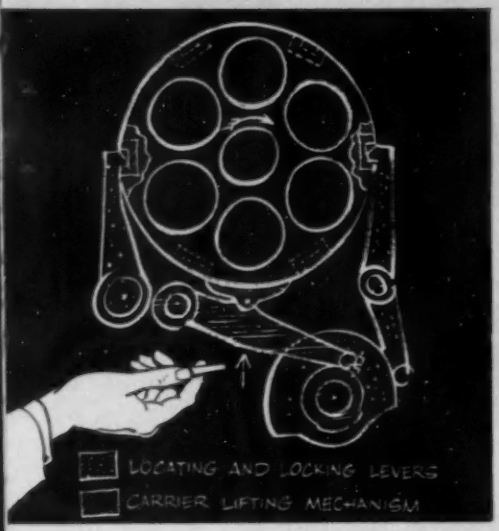
It extends the speed, accuracy and fine finish of precision straight and contour boring and turning to an even wider range of work.

New Britain's new vertical models feature accurate control of tool paths and cycle timing. This is the basic approach to precision boring employed in New Britain's famous single and double-end boring machines.

Shown below: a close-up of the tooling area of the Model 210 New Britain Vertical Precision Boring Machine at the top of the page.

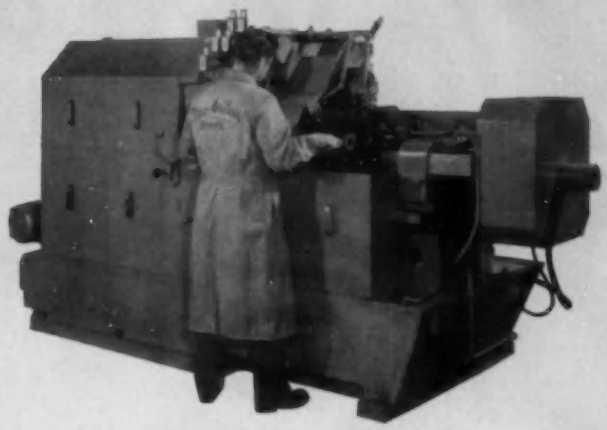
Two pieces are machined simultaneously by duplicate sets of tools. Left hand piece has been removed to show construction of chuck.





Even slight wear on the spindle carrier or its locating pads would destroy accurate alignment of end-working tools with center line of the spindle. Blackboard sketch shows how carrier is lifted during index, positively located and locked during cutting cycle.

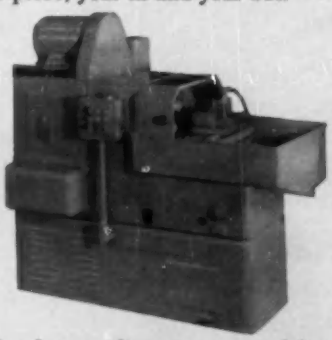
Billions of indexes with absolutely no wear!



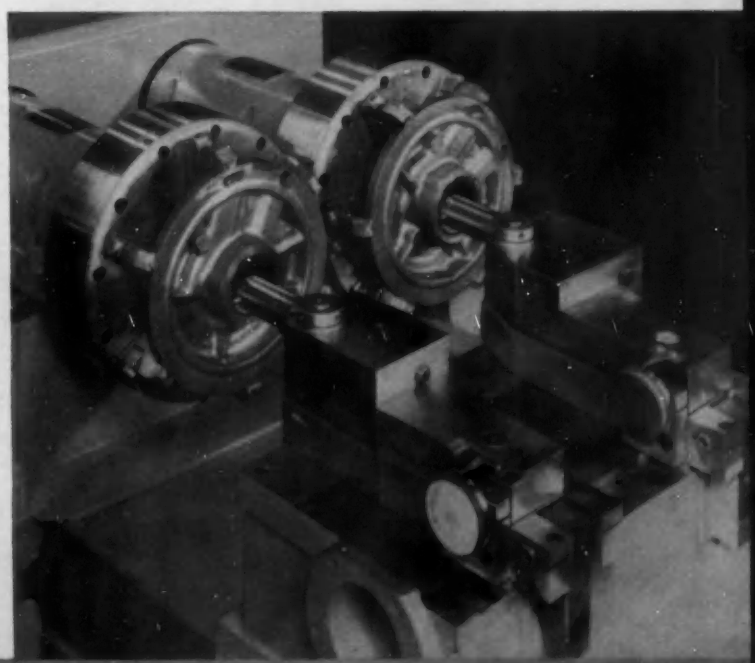
Experienced shop men say: *New Britain Chuckers stay on the job and stay accurate.* That sums up the profitable end results of exclusive features like the one described at the left.

The secret of precision boring is constant close control of the tool

Successful precision boring and turning calls for control of tool paths and cycle timing, both with "gage makers' " accuracy. Precision ground cams insure this accuracy under all conditions on a New Britain. This hairline control, combined with ruggedness and stamina for *permanent* accuracy, produces fine finishes piece after piece, year in and year out.

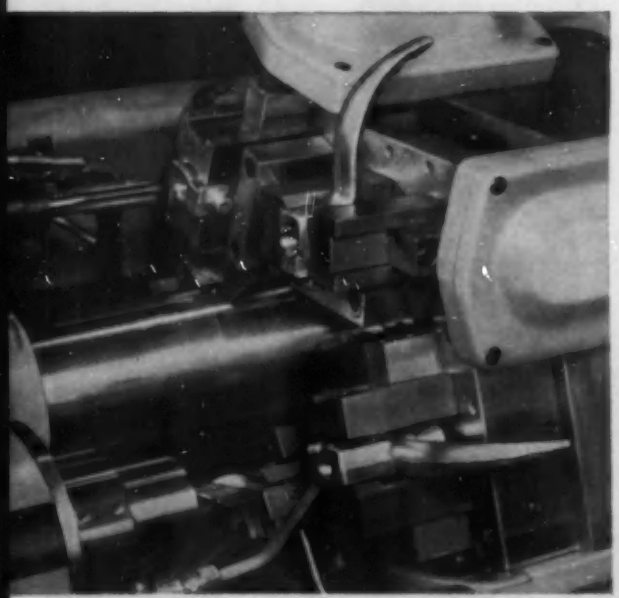


See the preceding two pages and the two following for other New Britain *New's*.





New New Britain Chucker will produce pieces as fast as operator can load them.



Irregularly shaped pieces — parts difficult to swing on a work-rotating chucker — pieces hard to produce at a profit, belong on the New Britain Model 23B.

This four-spindle chucker can machine up to 1290 pieces per hour (that's one every three seconds). A fifth, easily-operated, quick-acting chuck in the loading position minimizes idle time and operator fatigue.

If you produce pieces that lend themselves to a tool rotating machine, New Britain Model 23B could become one of the most valuable machines in your shop. Check with the New Britain man or write for Catalog on Model 23B.

LUCAS OF CLEVELAND



Model 6120S Lucas Precision Horizontal Boring Machine built for a large stamping plant, is used for reconditioning, altering and originating large die sections.

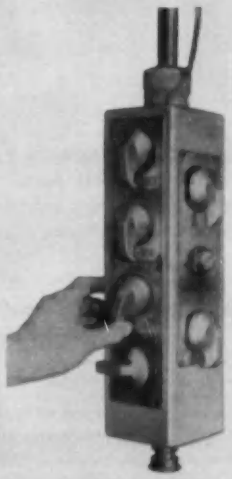
This short bed space-saving machine incorporates all the features of standard machines except a backrest for bar support. The 120" wide bed is of one piece construction for rigid table and saddle support.

This machine is ideally suited to heavy die work which combines operations of boring, drilling and milling in both high and low speeds.

This Lucas will be YEARS AHEAD for a long time

Because Lucas applies its engineering skill to boring machines exclusively — because so many of the important improvements have originated at Lucas — because every new development is incorporated in the next lot built, *you get the latest first when you buy a Lucas.*

For example: Lucas, one of the first to develop pendant controls on the Horizontal Boring Machine, now offers a new, compact, lightweight control pendant with smooth operating multi-purpose directional switch levers. Or take Lucas Automatic Power Positioning, with built-in, pre-set positioning feed which positively repeats a series of operations without the use of jigs and fixtures. Read more about these features and many other points of Lucas leadership — write for the complete story in detail. Lucas Machine Division, The New Britain Machine Company, 12302 Kirby Avenue, Cleveland 8, Ohio.



• AUTOMATIC BAR and CHUCKING MACHINES • PRECISION BORING MACHINES
• LUCAS HORIZONTAL BORING, DRILLING and MILLING MACHINES • NEW BRITAIN +GF+ COPYING LATHES

The NEW BRITAIN MACHINE COMPANY

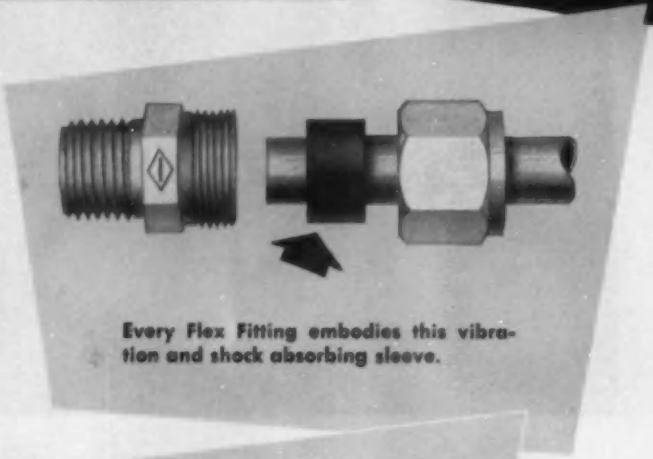
New Britain-Gridley Machine Division, New Britain, Connecticut
Lucas Machine Division, Cleveland 8, Ohio

See the preceding four pages for other New Britain New's.

The Fitting that Never Gets Tired of Absorbing Shocks and Vibration!

IMPERIAL FLEX FITTINGS

. . . Make Tube Fitting Failures Unnecessary



Every Flex Fitting embodies this vibration and shock absorbing sleeve.

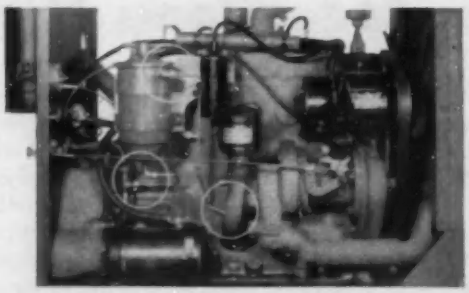
FLEX FITTINGS make safer joints that are virtually indestructible by vibration . . . absorb shock and minor tube movement . . . assure a positive pressure-tight seal.

FLEX FITTINGS are very easy to install . . . simply slip nut and Flex sleeve over tubing . . . insert tubing into body and tighten nut — that's all!



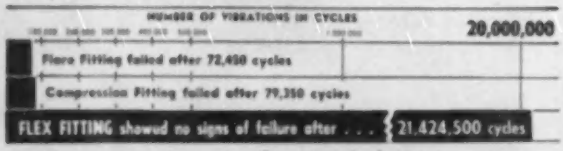
The Flex Fitting actually permits the tube to flex back and forth through angle shown. Note that tubing is cushioned against any damage.

FLEX FITTINGS can be used with all kinds of tubing



If you have a tough tubing connection job that involves vibration, shock or tube movement, it will pay you to consider IMPERIAL FLEX FITTINGS. Whether it's tractors, diesels, heavy power equipment, machinery or earth movers, you will be safe with FLEX FITTINGS. Thoroughly proved by extensive use.

Comparative Vibration Test Results



On vibration tests, where other fittings failed quickly, Flex Fittings withstood over 20,000,000 cycles without sign of failure.

Ask for Catalog 344

THE IMPERIAL BRASS MANUFACTURING COMPANY
1241 W. Harrison St., Chicago 7, Ill.
In Canada: 334 Lauder Ave., Toronto, Ontario

IMPERIAL

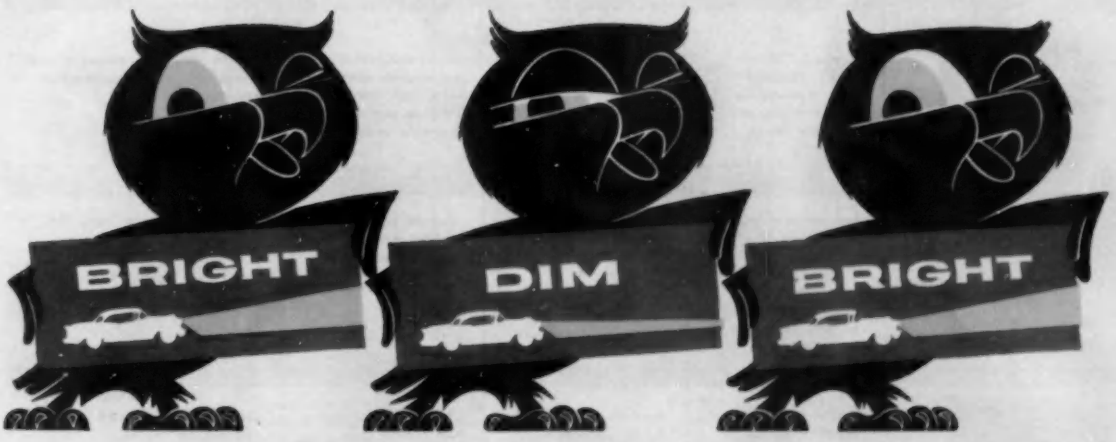
Pioneers in Tube Fittings and Tube Working Tools

GM GENERAL MOTORS

AUTRONIC-EYE®

AUTOMATIC HEADLIGHT CONTROL





AUTOMATICALLY AT NIGHT!



A new measure of night driving safety and convenience is awaiting motorists. With GM's Autronic-Eye, there's never a worry about headlight control. Automatically, as traffic approaches, lights dim . . . then back to bright when the road is clear. It ends a troublesome driving chore and highway courtesy becomes automatic at night. No wonder more and more car buyers are asking for the Autronic-Eye . . . the greatest advance in night driving safety in 30 years.

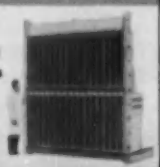
GUIDE LAMP DIVISION • GENERAL MOTORS CORPORATION • ANDERSON, INDIANA

Young RADIATOR COMPANY AUTOMOTIVE

...ruggedly-built to help keep

Young Radiator Company designs, engineers and manufactures standard and specially engineered heat transfer products... to minimize your cooling equipment service and repair costs.

Each Young product represents application of basic heat transfer principles with metals and alloys best suited for the job. These products contain many Young patented design features... special bonding techniques enabling units to withstand the most severe stresses and strains... reinforcing structures pretested under rigorous laboratory conditions and in the field.

YOUNG PRODUCT	FEATURES	SIZE AND CAPACITIES	ACCESSORIES	APPLICATIONS
Stamped Tank Sheet Metal Radiators 	Fully-soldered double-lockseam tubes; full wrap-around terne plate side members; double grip 2-way headers	Capacities to 300,000 B.T.U. per hr.	Pressure Caps, Fan Shrouds, Guard Screens, Shutters	Trucks, tractors, combines, power units . . . gas, Diesel, automotive and prime mover installations.
Cast Tank Radiators 	Fine grain, high strength, reinforced castings; one-piece or special free-flow sectional core construction	Capacities from 70,000 to 750,000 B.T.U. per hr.	Pressure Caps, Fan Shrouds, Guard Screens, Shutters, fan and fan bearing supports	Heavy duty trucks, prime movers, tractors, power units, gas, Diesel, and automotive installations.
Engine Jacket Water Coolers 	Rugged, "Mono-Weld" construction, replaceable core sections; removable tanks.	Capacities from 70,000 to 3,250,000 B.T.U. per hr.	Air-cooled, oil and gas cooling cores; direct fan drive; idler bearing and shaft assembly supports	Heavy duty, gas, gasoline and Diesel or Compressor engine cooling.
"HC" Cooling and Condensing Units 	Independent tripod fan mounting; vertical air discharge; Monofin, removable tube cores or plate fins for any operating pressure	Capacities from 550,000 to 11,000,000 B.T.U. per hr.	Manual or automatic shutter controls; v-belts; sheaves; oil and gas cooling coils	Cooling oil, water, gas and condensing steam vapors, hydro-carbons, and processing applications.
Gas, Gas Turbine and Diesel Locomotive, and Power Plant Radiators 	Heavy duty, integrally-built or sectionally built, top side or front mounting. Wide variety of core structures	Any required B.T.U. Capacity	Cooling or temperature control coils	Gas, gas turbine and Diesel Locomotive cooling.
"Mono-Weld" Sectional Radiators 	Welded construction; single or multiple section replaceable cores. Free-flow special Young designed and built headers.	Capacities from 70,000 to 3,250,000 B.T.U. per hr.	Air cooled, oil cooling core; direct fan drive; idler bearing and shaft assembly; expansion tank; air and sediment trap	Gas, gasoline and Diesel engine or compressor cooling.

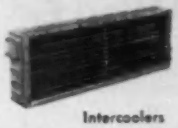
YOUNG RADIATOR COMPANY, RACINE, WISCONSIN

AND AVIATION HEAT TRANSFER PRODUCTS

your quality up...costs down!

Whatever your heat transfer problem — increased loads, horsepower, design or space limitations, call on Young. Let us put our more than 27 years of experience in design, engineering and manufacturing to work for you.

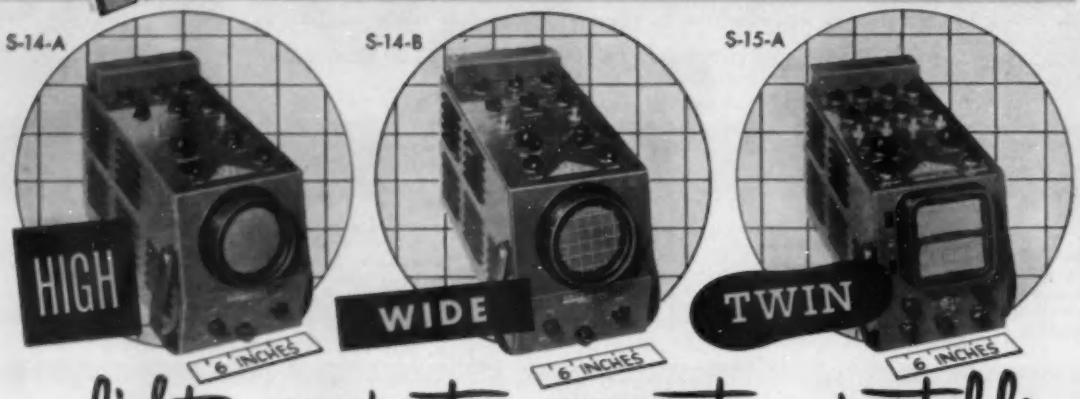
Write the Young Radiator Company, Dept. 105-C, Racine, Wisconsin, for complete information on how Young can help you solve complex heat transfer problems.

YOUNG PRODUCT	FEATURES	SIZE AND CAPACITIES	ACCESSORIES	APPLICATIONS
Steel Tank and Side Member "Mono-Weld" Heavy Duty Radiators 	Welded top tank & bottom tank & side member constructions	70,000 to 750,000 B.T.U. per hr.	Air cooled, oil cooling core; direct fan drive; idler bearing and shaft assembly; expansion tank; air sediment trap; steel blade shutters	Marine, oil field power units, compressor, military and other applications.
 Intercoolers	High or low pressure types in copper, aluminum or admiralty or other metals; plate or Monofin removable tube cores	Standard design Specially designed units to meet installation requirements	Fan Shrouds, Guard Screens, Shutters, high pressure containers and housings	Cooling of all types of compressors and supercharged engines . . . gas, gasoline, Diesel and Marine Diesel, compressors.
Diesel Locomotive Cab Utility Heaters 	For use with steam or hot water; copper fin, brass tube core; concealed piping; fresh air inlet; floor level outlet; fully enclosed motor	Hot water pressures up to 35 psi; steam to 5 psi	None	Small space heating mobile units with or without defroster equipment, shops, garages, locomotives, cranes.
Heat Exchanger Type "OSH" 	Seamless tubes, non-ferrous finned core; cast iron headers; turbulator strips.	9 standard sizes heat removal capacity from 1.0 HP to 50 HP	Fan Guard, motors, pumps, Kleen Core Filters, strainers	Cooling lube oil, hydraulic fluids, plastics processing equipment, industrial cutting fluids, marine engines.
Heat Exchanger  Type "F" Shell and Tube Bundle	Fixed tube bundle; Smooth flow bonnets; corrosion resistant tubes	180 standard Models in a range of sizes and capacities. Specially designed units to meet specific requirements	Zinc Pencils for added protection against dezincification of tube materials	Cooling torque converter oil, Bearing oil, quench oil, Transformer oil cooling, laundries, etc. hydraulic fluid and process cooling.
Heat Exchanger  Type "R" Shell and Tube Bundle	Removable tube bundle	512 Standard Models in a wide range of specially designed units to meet specific requirements	Zinc Pencils for added protection against dezincification of tube materials	Cooling bearing oil, quench oil, Transformer oil cooling, laundries, etc. Engine Jacket water & lube oil cooling.

PLANTS AT RACINE, WISCONSIN and MATTOON, ILLINOIS

Waterman POCKETSCOPE

The Pocket-Size Oscilloscope

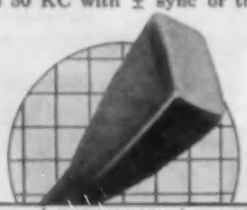


...light...compact...accurate...portable

Featuring small size, light weight and outstanding performance the HIGH, WIDE and TWIN POCKETSCOPES have become the "triple threat" of the oscilloscope field. Their incomparable versatility, reliability and accuracy have skyrocketed this team of truly portable instruments into unparalleled demand. Each oscilloscope features DC coupled amplifiers in both vertical and horizontal channels.

HIGH

The S-14-A HI-GAIN POCKETSCOPE provides the optimum in oscilloscope flexibility for analysis of low-level electrical impulses. Extremely light weight (12¾ lbs.), compact in size (12 x 5¾ x 7 in.), dependable and accurate in performance. Vertical and horizontal channels: 10mv rms/inch with response within 2DB from DC to 200 KC and pulse rise of 1.8 μs . . . non-frequency discriminating attenuators and gain controls with internal calibration of trace amplitude . . . repetitive or trigger time base with linearization from ½ cycle to 50 KC with ± sync or trigger.



WIDE

The S-14-B WIDE BAND POCKETSCOPE is ideal for investigations of transient signals, DC signals, aperiodic pulses or recurrent waveforms. Vertical channel: 50 mv rms/in. within —2DB from DC to 700 KC . . . pulse rise time of 0.35 μs. Horizontal channel: 0.15v rms/in. within —2DB from DC to 200 KC . . . pulse rise of 1.8 μs. Attenuators and gain controls are non-frequency discriminating . . . trace amplitude calibration . . . repetitive or triggered time base from ½ cycle to 50 KC . . . ± sync or trigger . . . trace expansion, filter graph screen and many other features . . . 14 lbs. . . . 12 x 6 x 7 inches.

TWIN

The S-15-A POCKETSCOPE is a portable, twin tube, high sensitivity oscilloscope with two independent vertical as well as horizontal channels. It is indispensable for investigation of electronic circuits in industry, school and laboratory. Vertical channels 10 mv rms/in. with response within—2DB from DC to 200 KC and pulse rise time of 1.8 μs . . . horizontal channels 1v rms/in. within —2DB from DC to 150 KC . . . non-frequency discriminating controls . . . internal signal amplitude calibration . . . linear time base from ½ cycle to 50 KC, triggered or repetitive, for both horizontal channels.

S-11-A

The S-11-A INDUSTRIAL POCKETSCOPE is a small, compact (5x7x11 inches), and lightweight (8¾ lbs.) instrument for observing electrical circuit phenomena. The flexibility of the POCKETSCOPE permits its use for AC measurements as well as for DC. The vertical and horizontal amplifiers are capable of reproducing within —2DB from DC to 200 KC with a sensitivity of 0.1v rms/in. . . . repetitive time base from 3 cycles to 50 KC continuously variable throughout its range . . . variations of input impedance, line voltage or controls do not "bounce" the signal—the scope stabilizes immediately.

RAYONIC CATHODE RAY TUBES BY WATERMAN

TUBE	PHYSICAL DATA		STATIC VOLTAGE		DEFLECTION*		LIGHT OUTPUT**
	FACE	LENGTH	A3	A2	VERT	HOR	
3JP1	3"	10"	3000	1500	111	150	332
3MP1	3"	8"		750	99	104	33
3RP1	3"	9.12"		1000	61	86	44
3SP1	1.5x3"	9.12"		1000	61	86	44
3XP1	1.5x3"	8.875"		2000	33	80	218

The basic properties of the cathode ray tube that concern the designer or the user are: deflection sensitivity, unit line brightness, line width, static voltage requirements and physical size. A comparison between cathode ray tubes manufactured by Waterman Products Company is shown in the table adjoining. These tubes are available in P1, P2, P7 and P11 phosphors. 3JP1, 3JP7, 3SP1 and 3XP1 are available as JAN tubes.

PULSESCOPE by Waterman

The Oscilloscope that Portrays the Pulse



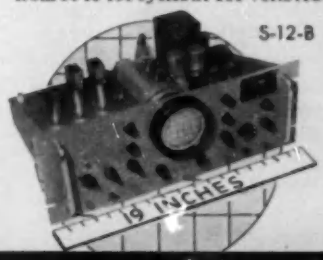
Classic Examples of Precision Engineering...

The PULSESCOPES are cathode ray tube oscilloscopes that portray the attributes of the pulse: shape, amplitude, duration and time displacement. All PULSESCOPES have internally generated markers with the basic difference that in the SAR PULSESCOPE the markers initiate the sweep while in the others the sweep starts the markers.

BROAD The S-6-A BROAD BAND Scope is a PULSESCOPE in performance, POCKETSCOPE in size. The instrument measures DC as well as AC signals. Unique DC calibration methods permit rapid measurements of either positive or negative, AC or DC signals. Vertical amplifier sensitivity of 0.2v rms/inch, and response to 5 mc within 3DB . . . pulse rise time of 0.1 μs . . . internal markers from 1 to 1000 μs . . . repetitive or trigger sweep from 5 cycles to 500 KC with 5X sweep expansion . . . sweep, marker and DC calibrating voltage available externally. Size 8½ x 6¾ x 13¾ in. Weight 22 lbs. Operates from 50 to 400 cycles at 115 volts AC.

LAB The S-5-A LAB PULSESCOPE is a JANized (Gov't Model No. OS-26) portable, AC, wide band-pass, laboratory oscilloscope ideal for pulse as well as general purpose measurements. Internal delay of 0.55 μs permits observation of pulse leading edge. Includes precision amplitude calibration, 10X sweep expansion, internal trace intensity time markers, internal trigger generators and many other features. Video amplifier 0.1v p to p/inch . . . pulse rise time of .035 μs or response to 11 mc. 1.25 to 125,000 μs triggered or repetitive sweep . . . internally generated markers from 0.2 to 500 μs . . . trigger generator from 50 to 5000 pps. for internal and external triggering. Operates from 50 to 400 cycles at 115 volts AC.

SAR The S-4-C SAR PULSESCOPE is a JANized (Gov't Model No. OS-4) portable instrument (31.5 lbs.) for precision pulse measurements for radar, TV and all electronic measurements. Portrays all attributes of the pulse . . . internal crystal controlled markers of 10 and 50 μs available for self-calibration . . . in R operation a small segment of the A sweep is expandable for detailed observation with a direct-reading calibrated dial accurate to 0.1%. Video amplifier band-pass up to 11 mc . . . optional video delay 0.55 μs . . . pulse rise and fall time better than 0.07 μs . . . R pedestal (sweep) 2.4 to 24 μs . . . video sensitivity of 0.5v. p to p/inch. Easily convertible from μs to yards. Operates from 50 to 400 cycles at 115 volts AC.



RAKSCOPE Because the panel is only 7" high and fits any standard rack, the S-12-B RAKSCOPE admirably fills the need for a small oscilloscope of wide versatility. With all the features of the S-11-A POCKETSCOPE, the RAKSCOPE is JANized (Gov't Model No. OS-11), and has many additional advantages; the sweep, from 5 cycles to 50 KC, is either repetitive or triggered . . . vertical and horizontal amplifiers are 50 mv rms/inch with band-pass from 0 to 200 KC . . . special phasing circuitry for frequency comparison.

WATERMAN PRODUCTS CO., INC.

WATERMAN PRODUCTS

PHILADELPHIA 25, PENNA., U.S.A.

CABLE ADDRESS, POKETSCOPE, PHILA.

Manufacturers of POCKETSCOPES® • RAKSCOPES® • PULSESCOPES® and RAYONIC® TUBES

...and NOW COLD DRAWN LEADED STEEL BARS PRODUCED BY J&L STEEL



They're leaded... they're free-cutting...

available in both Bessemer and Open Hearth grades

J&L LEADED STEEL BARS PROVIDE:

1 ***Faster Machinability***... because with J&L's Leaded Steels much higher cutting speeds are possible.

2 ***Increased Tool Life***... because the lead addition in J&L's Leaded Steels lowers the coefficient of friction thereby reducing heat that develops in the cutting edges of tools.

3 ***Improved Surface Finishes***... because J&L's Leaded Steels machine to fine surface finishes.

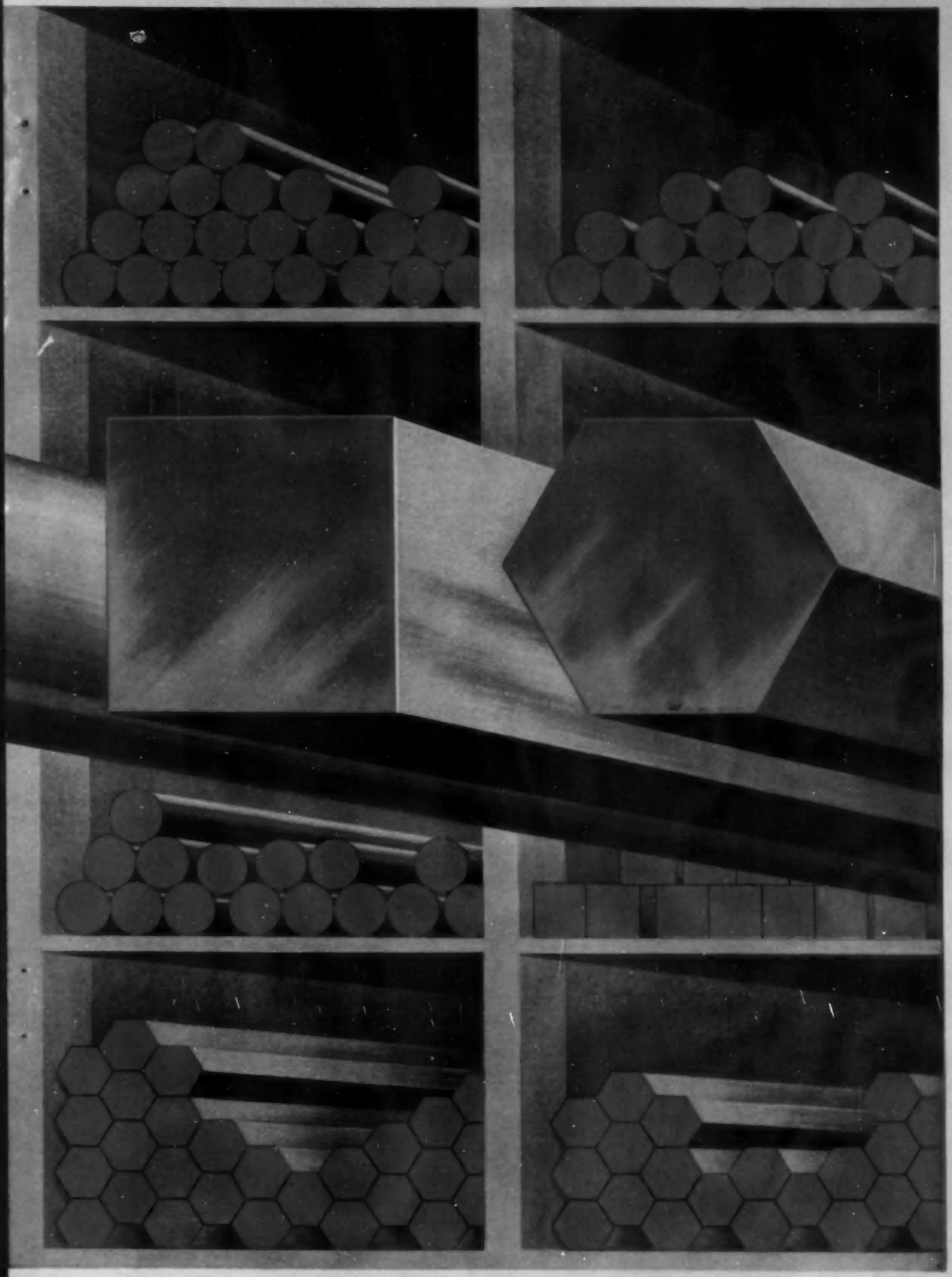
4 ***Lower Overall Costs***... because the free-cutting qualities of J&L's Leaded Steels boost production and, at the same time, reduce part rejections.

CALL J&L TODAY

Phone the J&L District office or warehouse nearest you

Jones & Laughlin
STEEL CORPORATION – *Pittsburgh*

J&L STEEL



5 things you should look for in Special Fasteners

PUT THEM TO THESE TESTS:

1. Can they be installed simply and quickly?

2. Is the fastening action smooth?

3. Do they lock securely... positively?

4. Can they take the load?

5. Do they have the design flexibility you need?

Every one of Simmons' "Big Five" Fasteners meets *all* of these tests. Each type of Simmons Fastener has proved to be an assembly-cost saver in a wide range of products including refrigerators, washing machines, aircraft, machine tools, electrical equipment, electronic equipment, office equipment, prefabricated portable shelters, coolers, and demountable furniture. Simmons' 36-page catalog gives you all the facts on these five product-improving, cost-reducing fasteners. It contains dozens of application examples, complete specifications, installation instructions and engineering data. Write for your copy today. Ask for samples, too.



Simmons Fastener Corporation, 1749 N. Broadway, Albany 1, N. Y.

Simmons

QUICK-LOCK
SPRING-LOCK
ROTO-LOCK
LINK-LOCK
DUAL-LOCK

FASTENERS WITH USES UNLIMITED

and 5 Simmons Fasteners that give them to you

CHECK THESE SIMMONS COST-CUTTERS:



QUICK-LOCK • Easy to install, QUICK-LOCK is ideal for assembling removable panels and access doors. A 90° turn locks it in place. Stud is self-ejecting when unlocked; visual inspection shows whether fastener is locked. Spring loading takes initial load; solid supports carry increased load. Available in various sizes with choice of stud and receptacle types.



SPRING-LOCK • One-piece fastener for blind holes has load-carrying steel spring wire. Spring steel arms lock it securely, prevent loosening under vibration. SPRING-LOCK is self-adjusting for various material thicknesses, locks with a twist of the wrist. Made in all-metal and plastic with steel insert. Perfect for shelf supports, washer knobs, brackets.



ROTO-LOCK • Makes butt or right-angle joints easily. Tapered cam design permits secure locking even in misaligned or semi-open position. ROTO-LOCK carries heavy tension and shear loads; can be used for air and water-tight seals. Solidly built without springs or delicate mechanical parts; unaffected by arctic temperatures or field service. Excellent wherever demountability is an important factor.



LINK-LOCK • Springless latching device for use wherever pre-loaded closure is required. Impact and drop-resistant, LINK-LOCK provides heavy fastening pressure and high load-carrying capacity. Excellent for water and pressure-tight sealing. Withstands 70-below temperatures. Engagement latch can be varied for different conditions. Comes in three sizes for a wide range of applications including instrument cases and storage boxes.

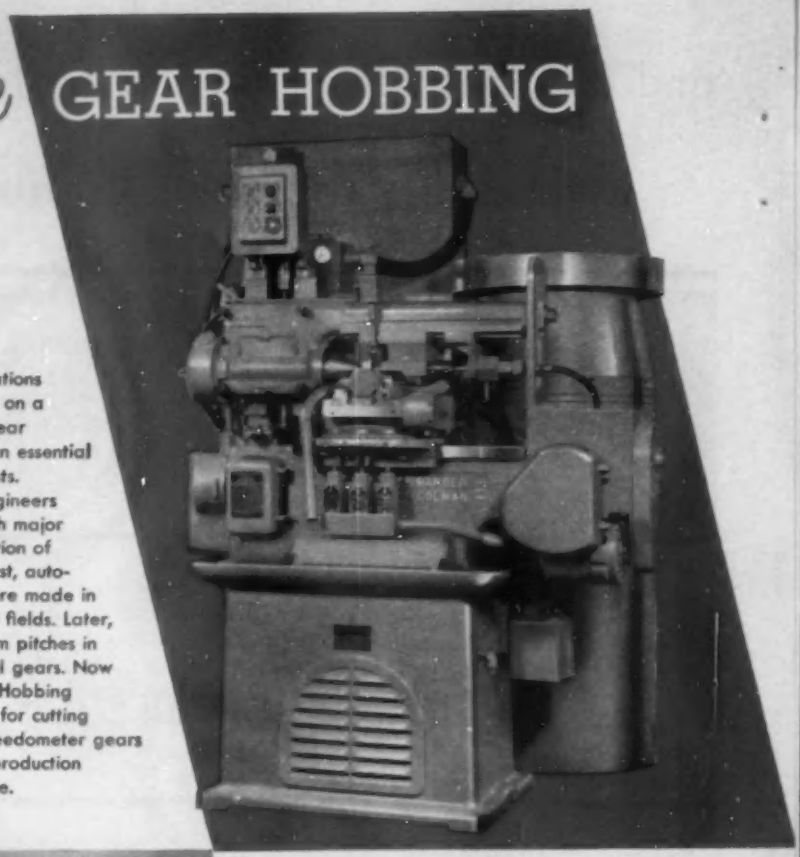


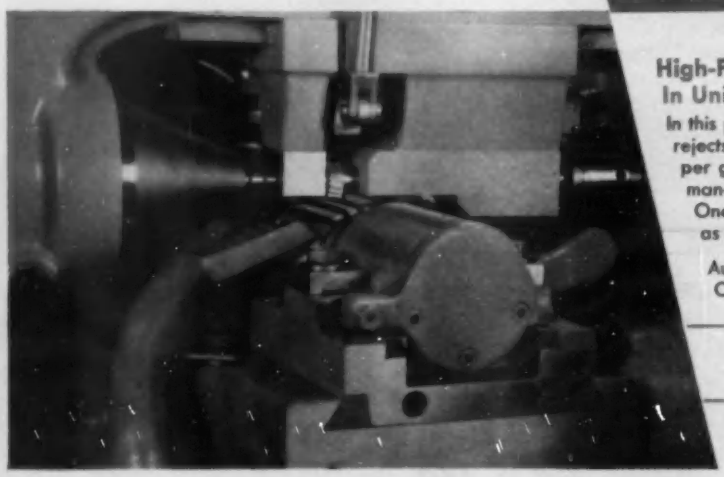
DUAL-LOCK • Simmons' newest high-load, positive-locking structural fastener. Double-acting take-up insures heavy closing pressure with minimum pressure on operating tool. Trigger action of DUAL-LOCK assures full open and closed positions. Can be recessed in panels or surface mounted. Withstands 7000-lb. tension. Ideal for military shelters, shipping containers, aircraft cowlings and sheet metal guards.

Fully Automatic GEAR HOBBING

offers
new low costs
on gears
16 pitch or finer

As more and more gear operations are modernized to place them on a competitive basis, automatic gear hobbing equipment becomes an essential approach in reducing gear costs. Since 1937 Barber-Colman engineers have been working closely with major gear producers in the application of automatic gear hobbing. At first, automatic hobbing applications were made in the watch gear and instrument fields. Later, machines were built for medium pitches in other fields, such as fishing reel gears. Now this latest Automatic No. 6-10 Hobbing Machine is designed specially for cutting automatic transmission and speedometer gears to meet the required rate of production on an automatic production line.





High-Production Plant Reports Savings In Unit-Costs with Fewer Gear Rejects

In this particular production plant, fewer gear rejects are occurring. An overall reduction in cost per gear has been effected through reduced man-hours and continuous high-speed output. One of a battery of machines performs as follows:

Automatic Cycle —	356 Hob RPM, 175 Hob SFM. .050" feed per rev., 60-second complete cycle time.
Transmission Gear —	16 teeth, 18° 30' helix angle 18 DP., SAE 1330, .937" OD. x ⅜".
Class C Accurate Unground Hob	1⅞" dia. x 3" face x ¾" bore, 1 thread, unground, pre-shave.

Completely Automatic Cycle Provides Continuous High-Speed Gear Cutting

Blanks are automatically loaded through a hopper-feed system and positively located and clamped hydraulically on a solid arbor in cutting position. The cycle sequence includes rapid traverse to the hobbing position, lowering of the work slide to cutting depth, hobbing the blank, raising the work slide, rapid traverse to the right, and unload. A new blank then is automatically presented for hobbing and the cycle repeated continuously until the machine is shut off.

Machine features include automatic hob shifting for greater tool life and metered hydraulic pressure for positive arbor mounting and ejection. Rapid traverse is actuated electrically, and the work slide is hydraulically actuated.

BUILDERS OF PRECISION GEAR

Adaptable to Wide Range of Long-Run, High Speed Gear Production.

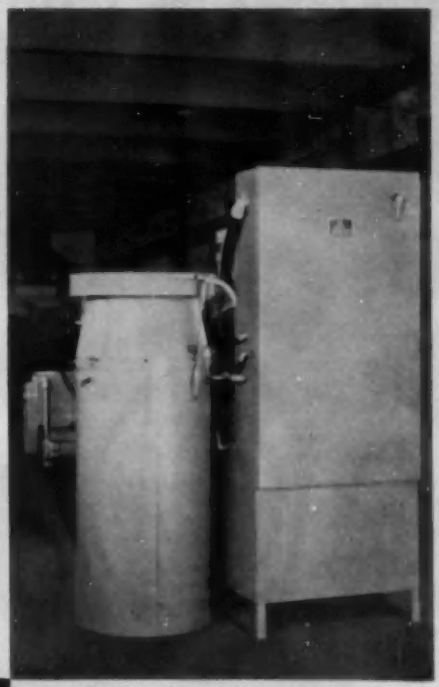
This type of cycle arrangement is adaptable to many similar long-run gear cutting operations within the general range of 16 pitch and finer, depending upon the particular gear specifications. The cycle is arranged to suit the requirements of the job, and tooling, feed, speed and cycle-timing will depend upon the required production and gear specifications.

Positive Control Over Gear Accuracy Through Automatic Arbor Loading.

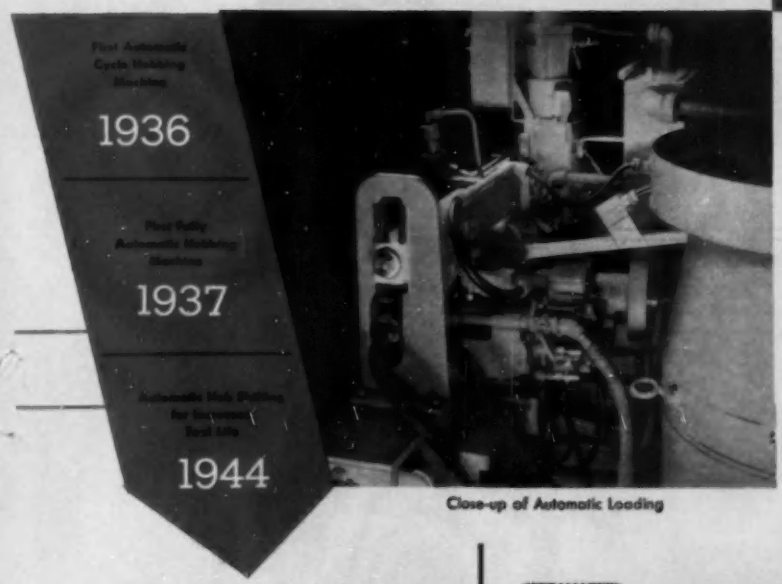
Barber-Colman automatic hobbing supplies positive gear accuracy control through specially developed tooling which mechanically mounts blanks solidly upon the work arbor prior to cutting. This arrangement eliminates chances for looseness, runout or vibration likely to occur in other types of mounting. Work arbors are designed for positive pick-up and location of the blank.

Cycle Fully Protected by Automatic Stops.

A combination of electric limit switches, program motor and mechanical movements governs the cycle. Faulty blanks are automatically rejected if presented for hobbing, and the machine is under complete control at all times.



Rear View Showing Automatic Loader and Electrical Panel



Close-up of Automatic Loading

Engineering Service Available Without Obligation

Check your high production gear operations to determine whether you are maintaining a competitive cost basis. Barber-Colman engineers will gladly consult with your gear production people to demonstrate the cost-saving benefits of automatic hobbing. Ask your Barber-Colman representative to arrange an appointment for you, or write directly to Automatic Hobbing Engineering. No obligation!

HOBS • CUTTERS • REAMERS
HOBBING MACHINES
HOB SHARPENING MACHINES

BARBER COLMAN

Barber-Colman Company

GENERAL OFFICES AND PLANT, 673 ROCK STREET, ROCKFORD, ILLINOIS

HOBS AND MACHINES SINCE 1911

if the FLEET OWNER built his own trucks—





ZENITH CARBURETORS

would be *his* choice

They say it's a buyer's market. Well the truth is, for the truck operator, it's always been a buyer's market.

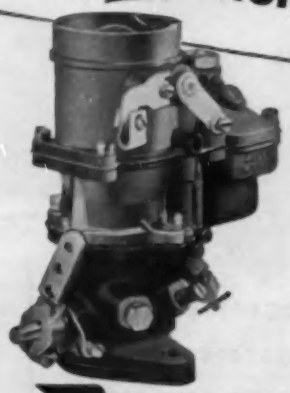
No American businessman sets more exacting standards than the fleet operator in his purchase of new equipment. There is good reason for this, for the operator's success or failure is to a very large degree determined by the efficiency of the vehicle he employs.

This yardstick of efficiency is likewise applied to every component part that contributes to truck performance.

That's why you can be certain if truck operators built their own trucks, Zenith* would be the choice for standard equipment.

One more reason why—if you build, buy, sell or operate trucks, Zenith should be *your* choice for the best in carburetion.

*REG. U.S. PAT. OFF.



ZENITH CARBURETOR DIVISION OF Bendix
AVIATION CORPORATION

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SEE THE LEAKS...

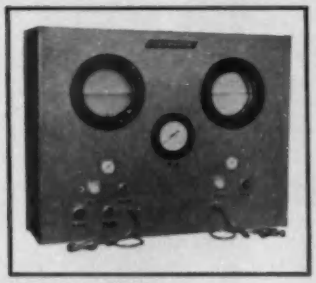


WITH Vacuum

AUTOMATIC TRANSMISSIONS • OIL PANS • WATER PUMPS • MANIFOLDS • CYLINDER HEADS •
CYLINDER BLOCKS • FUEL TANKS • AXLE HOUSINGS • MISCELLANEOUS CASTINGS

VACUUM TESTING

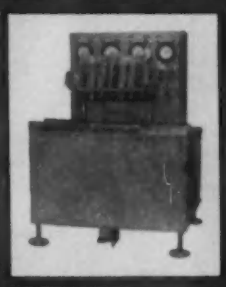
3 TIMES FASTER—DRY, ACCURATE indications of leaks which can be observed, semi-automatic, or fully automatic.



TWO CELL BUBBLER
LEAK INDICATOR



ALUMINUM EXPLOSION
PROOF ORDINANCE
LEAK CHECKER



"INTAKE VALVE
WASHER" LEAK
DETECTING MACHINE



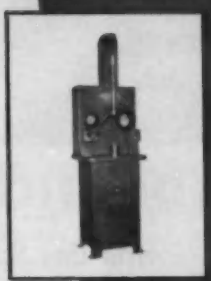
AUTOMATIC LEAK
DETECTOR FOR SMALL
CAST SWEAT FITTINGS

PRESSURE TESTING

PNEUMATIC—HYDRAULIC

COMBINATION
PRESSURE & VACUUM
FOR MAXIMUM
LEAK INDICATION

Test for strength with pressure and indicate leaks with sensitive vacuum instruments simultaneously or in sequence. Hydraulic testers designed for extreme pressure applications.



PNEUMATIC LEAK
CHECKING OF METAL
TO METAL SEAL
ON AUTOMOTIVE
TRANSMISSION
REACTOR SHELL

MEASURING & GAGING WITH VACUUM GO—NO GO

Vacuum can be used for measuring dimensions or surface condition in problems difficult or impossible with other methods. Typical examples are surface flatness checking, valve seat angularity gaging, and checking valve seat concentricity in relation to valve guide.

LABORATORY FACILITIES

LABORATORY FACILITIES FOR APPLICATION, EXPLORATION AND JOB TESTING;
FEATURING VACUUM TO .1 mm; PRESSURES TO 5500 PSI, PNEUMATIC

FOR RECOMMENDATIONS REGARDING YOUR TEST APPLICATION SEND ENGINEERING DATA TO REPRESENTATIVE OR DIRECT TO FACTORY.

OR SEND COUPON TODAY

Gentlemen: Please send full details of the WHITTINGTON
Vacuum and Pressure Testing Equipment.

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COMPANY _____

ADDRESS _____

CITY _____ STATE _____

WHITTINGTON PUMP AND ENGINEERING CORPORATION
1126 PROSPECT STREET—INDIANAPOLIS 3, INDIANA



Sciaky patented Three-Phase Welder at Colorcraft, Indianapolis, Indiana.

PRODUCTION COSTS CUT 50%

with One Sciaky Patented Three-Phase Welder

One small, standard Sciaky Three-Phase welder and *one* worker, not skilled, now join more aluminum pitchers and handles for Colorcraft than three workers previously did with screws. Cost per unit is cut in half. Production is increased from 140 to 160 units per hour. Rejects have virtually been eliminated and welds are neater in appearance than screws.

A Sciaky balanced load Three-Phase welder with 85% power factor (compared to 30% for conventional single phase) and a 50% reduction in power demand, is far less expensive to operate than unbalanced load welders. Installation cost is estimated at half that of single phase.

Write today for "Resistance Welding at Work," Vol. 4—No. 3, detailing Colorcraft's story. It's dramatic proof of Sciaky's basic thinking—welders designed for *more useful work* at *lowest operating cost* with *maximum reliability*.

FACTS ABOUT SCIAKY'S PATENTED THREE-PHASE

	SINGLE-PHASE	SCIAKY THREE-PHASE	SAVINGS
TRANSFORMER RATING	250 KVA	100 KVA	150 KVA
WELDING KVA DEMAND	650 KVA	325 KVA	325 KVA
LINE AMPS PER CONDUCTOR 440 V.	1,476 A.	430 A.	1,046 A.
POWER FACTOR	30%	85%	Greatly Improved
INSTALLATION COST—EST.	$10,500	$5,250	$5,250

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SCIAKY

Sciaky Bros., Inc., 4925 West 67th Street, Chicago 38, Illinois

One Waldes Truarc Ring Saves a Pound in Weight Replaces Cast Retainer Plate and Four Screws

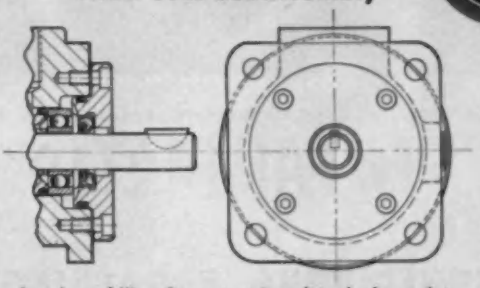
Denison Vane Type Pump/Motor



The Denison Engineering Company of Columbus, Ohio uses a Waldes Truarc Beveled Retaining Ring (Series 5002) in their pump/motor to achieve a simpler, lighter, more easily assembled unit and to cut both material costs and production time.

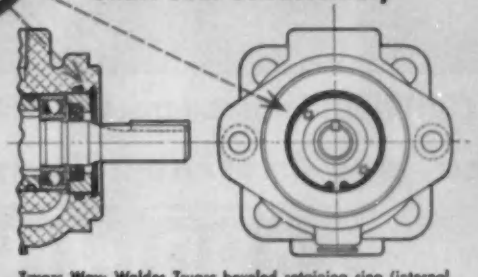
This vane-type power package operates as either a fluid pump or motor without alterations of any kind. Built for 2000 psi continuous duty, rugged construction was essential.

Shaft Seal Subassembly



Experimental Way: One cast retainer plate plus four socket head cap screws hold unit together. Assembly requires skilled labor, machinery, time-consuming careful adjustment.

Shaft Seal Subassembly



Truarc Way: Waldes Truarc beveled retaining ring (internal 5002) retains shaft and bearings, takes up accumulated tolerances rigidly, prevents leakage around shaft. Unit is one pound lighter. Assembly is quick and easy, more economical.

Wherever you now use machined shoulders, bolts, snap rings, or cotter pins, there's a Waldes Truarc Retaining Ring designed to do a better, more economical job. Truarc Rings are precision engineered, quick and easy to assemble and disassemble.

More than 5,000 stock-sizes of the different Truarc ring types available. Ninety stocking points throughout U. S. A. and Canada.

Find out what Waldes Truarc Retaining Rings can do for you toward reducing costs and improving your product. Send your blueprints to Waldes Truarc Engineers for individual attention without obligation.

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RETAINING RINGS

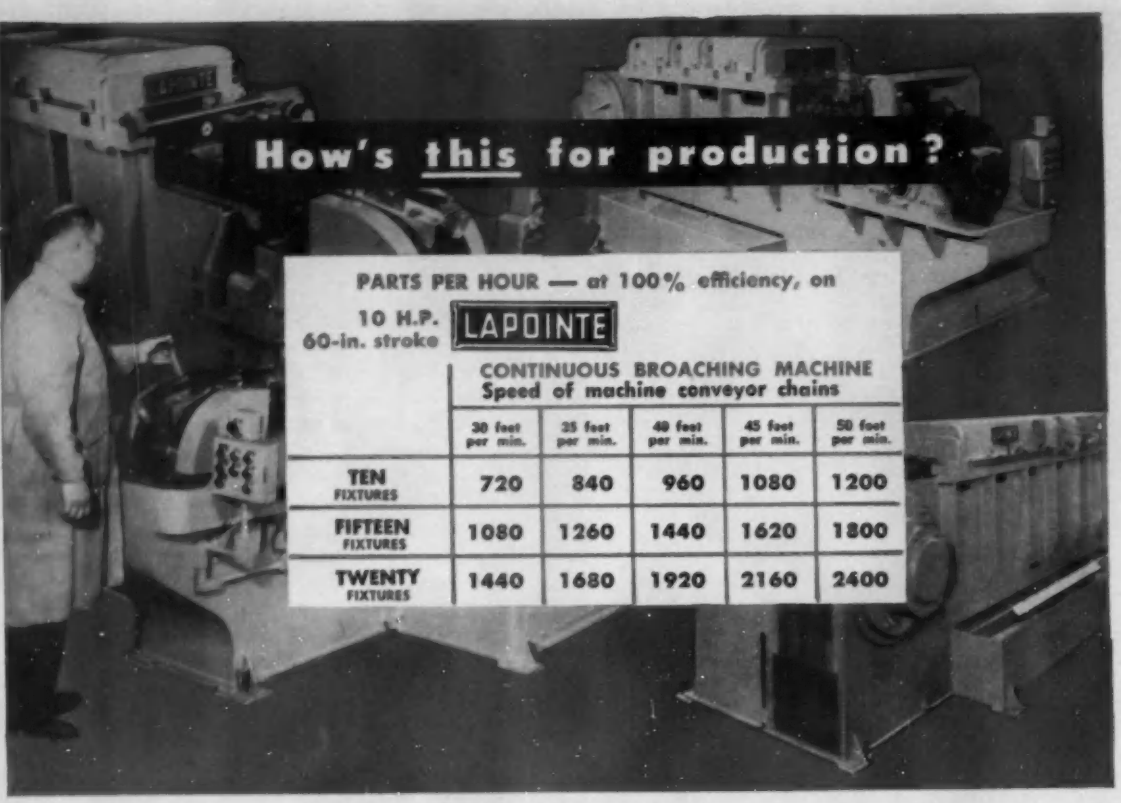
WALDES KOHINOOR, INC., LONG ISLAND CITY 1, NEW YORK

Waldes Kohinoor, Inc., 47-16 Austel Place, L. I. C. 1, N. Y.
Please send the new supplement No. 1 which brings Truarc Catalog RR 9-52 up to date.
(Please print)

Name.....
Title.....
Company.....
Business Address.....
City..... Zone..... State.....

AT-887

WALDES TRUARC Retaining Rings, Grooving Tools, Pliers, Applicators and Dispensers are protected by one or more of the following U. S. Patents: 2,382,948; 2,411,429; 2,411,761; 2,416,852; 2,420,921; 2,428,341; 2,439,785; 2,441,846; 2,455,165; 2,483,379; 2,483,380; 2,483,383; 2,487,802; 2,487,803; 2,491,306; 2,491,310; 2,509,061; 2,544,631; 2,546,616; 2,547,263; 2,558,704; 2,574,034; 2,577,319; 2,595,787, and other U. S. Patents pending. Equal patent protection established in foreign countries.



PARTS PER HOUR — at 100% efficiency, on 10 H.P. 60-in. stroke LAPOINTE CONTINUOUS BROACHING MACHINE

	Speed of machine conveyor chains				
	30 feet per min.	35 feet per min.	40 feet per min.	45 feet per min.	50 feet per min.
TEN FIXTURES	720	840	960	1080	1200
FIFTEEN FIXTURES	1080	1260	1440	1620	1800
TWENTY FIXTURES	1440	1680	1920	2160	2400

for **CONTINUOUS** MASS-PRODUCTION **BROACHING** of contour and flat surfaces, to precision tolerances

the production figures are FANTASTIC

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(. . . with the machine that doesn't stop!)

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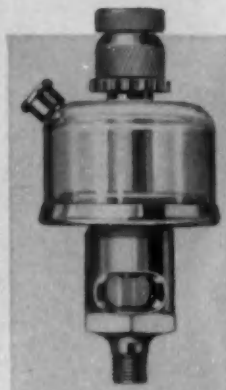
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This model is designed to fit into a simple drilled hole. Ideal for use on small motors, generators, starters and light machinery—for dependable oil hole protection at moderate cost. Larger sizes frequently used as filler caps on tanks or reservoirs. Style R—No. 305.



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Rate of oil flow regulated by needle valve, directly observed through sight glass in stem. Shut-off knob does not affect needle valve adjustment. Visible oil supply. Non-breakable. Tops in convenience and dependability, at low cost. Style NFU—No. 3602-A.

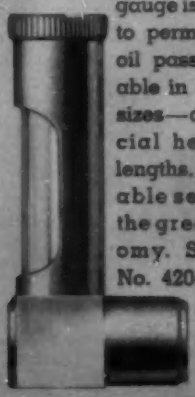


GEAR CASE GAUGES

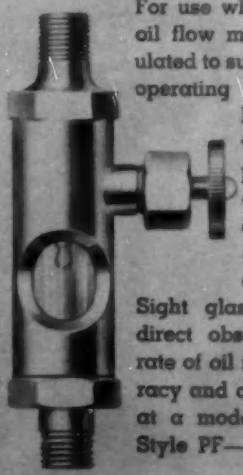
This oil gauge plug permits instant checking of oil level within a transmission or gear case. For use where construction permits insertion in tapped hole. A valuable addition to any such equipment — at very low cost. Style BW—No. 4042.

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Heavily constructed in a single piece from forged brass — this gauge is also drilled to permit generous oil passage. Available in many stock sizes—and in special heights and lengths. For dependable service with the greatest economy. Style FG—No. 4204.



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For use where rate of oil flow must be regulated to suit changing operating conditions. Needle valve permits extremely accurate adjustment of oil feed. Sight glass provides direct observation of rate of oil flow. Accuracy and convenience at a moderate price. Style PF—No. 4290.

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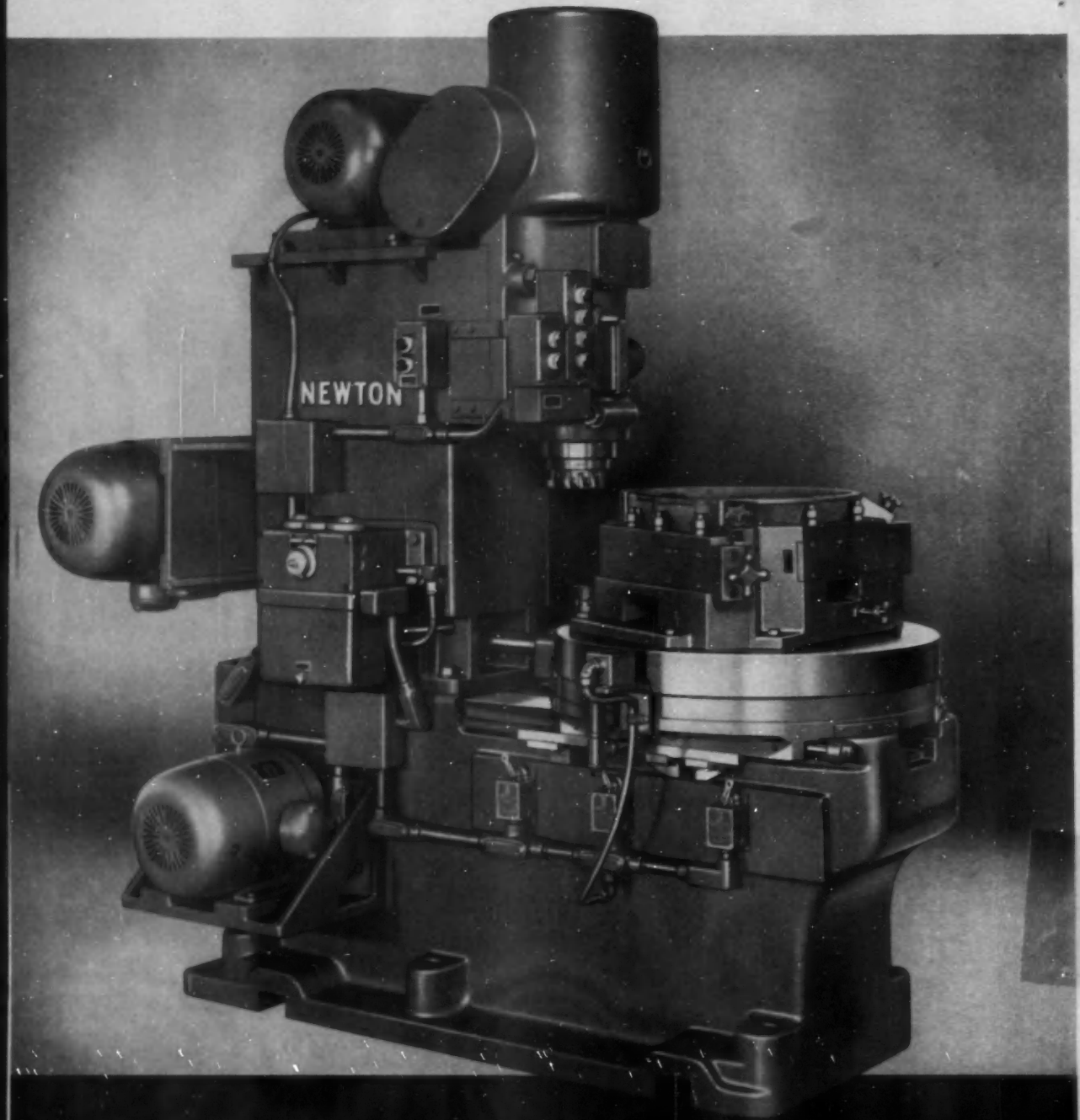
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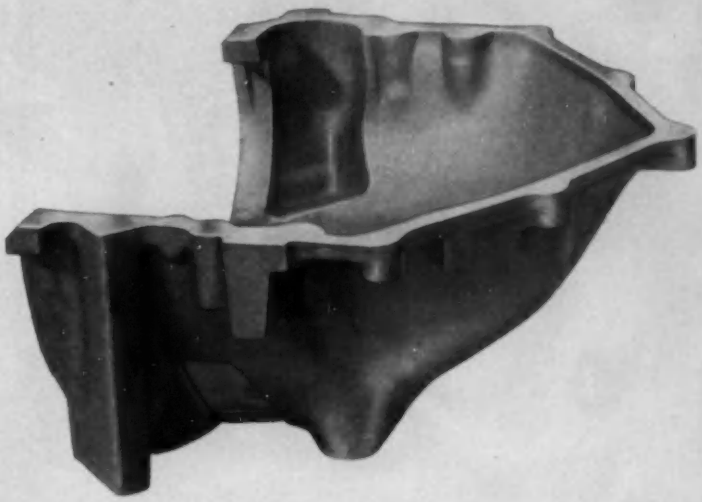


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of thin Castings...

Newton Vertical Rotaries



- You *can't* mill the flange on this flywheel housing like you would a cylinder block. It's too thin for big diameter cutters.
- But you *can* mill it with a small diameter cutter on a Newton Vertical Rotary and *mill it fast!* All the operator does is load, push a button and unload. A 100 per cent automatic feed and traverse cycle does the rest.
- Of course, it is the *circular feeding of the table* that turns the trick and allows you to use small diameter cutters on this kind of work.

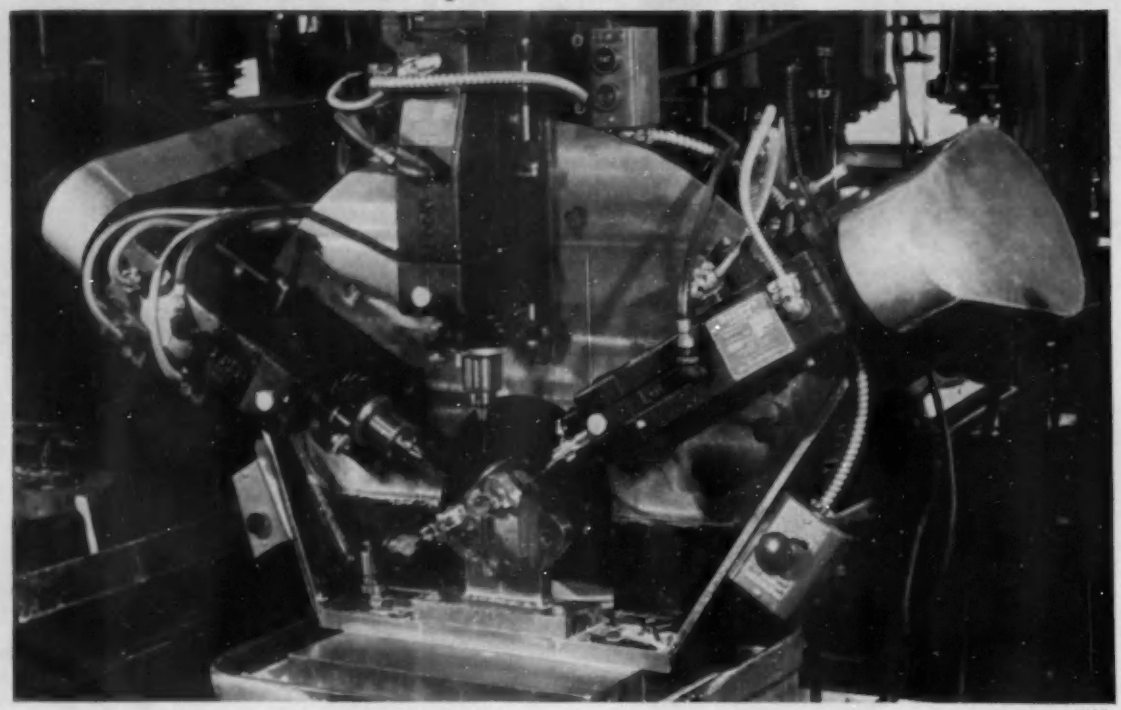
COMPANY, ROCHESTER 10, N. Y.

Birmingham Company, Incorporated

The Case of The Bellows Co.
VERSUS
The High Cost of Drilling Holes

Testimony taken by tape recording in the plant of [redacted], Detroit, Michigan

Operation: Drilling ¼" holes in hex head aircraft bolts on a tool-room-built machine, using three Bellows-Locke Drill Units



1102A

Statement of [redacted], General Superintendent

Q. How was this operation performed before you built this special machine?

A. We drilled on a single spindle by hand, with an index fixture to locate the three stations. However, it was difficult to hold a true position and the hole did not come through parallel from one end to another.

Q. Why wouldn't it come through parallel?

A. On account of feed and speed. The feed had to be controlled by hand.

Q. The old way, besides hand feeding, you would have to hand index the part?

A. Right. We had to index every time we drilled a hole.

Q. Can you give me a comparison of production rates on the old method and on this machine?

A. We increased almost 50%.

Q. What is the highest rate of production you get on this machine?

A. Somewhere around 240 pieces per hour.

Q. What other advantages have you found? You get a good deal less spoilage on finished parts, don't you?

A. Yes, considerably. We hardly get any spoilage at all now.

Q. On the old method, did you need to use a skilled operator?

A. Well, he had to know something about it in order to handle the drill carefully. When we're using a No. 60 drill, it does require a person that knows how to handle it.

Q. On this machine, you just use a girl operator, don't you?

A. That's all—the machine takes anybody as long as they can put a part in and press the button and take the part out.

Q. How long has this machine been in operation in your shop?

A. I can't tell exactly—about six months or more.

Q. Has it been working every day?

A. 9 hours a day, 5 days, sometimes 6 days, a week.

Q. Do you have other Bellows equipment in your plant here?

A. We have two infeeds on centerless grinders; we have all our milling machines operated by Bellows Air Motors; vises operated by Air motors; also on Dearborn fixtures which we index; as well as Air Motors on collets—it's all Bellows operated.

Q. Do you find this equipment adaptable for use on other machine tools?

A. Yes, we find it can be used on any machine.

Q. How long have you been using Bellows equipment here?

A. Ever since I remember—around 1945 or '46, during the last war.

Q. Do you have any of those old Bellows Air Motors around here now?

A. Yes, we have quite a few—a number of them were destroyed in 1948 when we had a fire, but after the fire we were able to overhaul them and put them back on the machines.

Q. You mean you put them in operation after they were damaged in the fire?

A. That's right.

Q. Are they still working?

A. Some of them are still working.

Q. They must be about 10 years old now?

A. Yes, they must be.

Statement of [redacted], Machine Operator

Q. [redacted], how long have you worked here?

A. Eight months.

Q. Did you do this operation on the old machine where you had to do it by hand?

A. Yes, sir.

Q. Could you tell me a little bit about that?

A. Well, it was not as easy to work as this new machine.

Q. Why was it hard to work on the old machine?

A. Well, you had to turn it every time you drilled and on the automatic, it turns by itself.

Q. And each time you turned it, did you have to pull the drill down?

A. Yes, we had to pull the drill down each time we drilled a hole.

Q. Did your shoulders get tired?

A. Oh, yes. It made your arms and shoulders awfully tired.

Q. Did you have to take any rest periods on the old machine?

A. Yes, because my arms would get so tired I couldn't keep on working.

Q. How often would you have to rest?

A. About twice during the morning.

Q. When you'd go out to lunch after working on this old machine—did your arms get stiff or anything like that?

A. Yes, at night—especially when I'd quit work, they'd get awful stiff.

Q. What did you do for it?

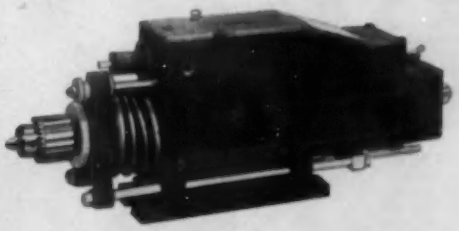
A. Rub them and bathe them and that's about all, I guess. Then do it again the next day.

Q. I imagine you like this new operation pretty well?

A. Oh, yes, I like this fine.

The electrically driven spindle is fed by air power up to the work at which point hydraulic feed control takes over. Built-in speed controls permit regulation of rapid traverse. Drill depth adjustable up to 3". Drilling capacity up to ⅜" in mild steel. All controls are built-in. Valving is electrically actuated. Depth accuracy .005" (with optional electric depth control .001"). Optional deep hole drilling controls. Available in three types: pulley driven, in-line direct motor drive, or parallel mount motor drive. Also available with reversing motor for direct tapping operations.

This Is the Drill Unit That Increased Hole Drilling Production Almost 50%





WRITE FOR THIS BOOKLET

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11B2A

The Bellows Co.
AKRON, OHIO

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Phenolite Laminated Plastic performs in such a wide range of applications—from insulation in automobile lights to gears in automatic plane pilots—that it truly deserves its reputation for versatility.

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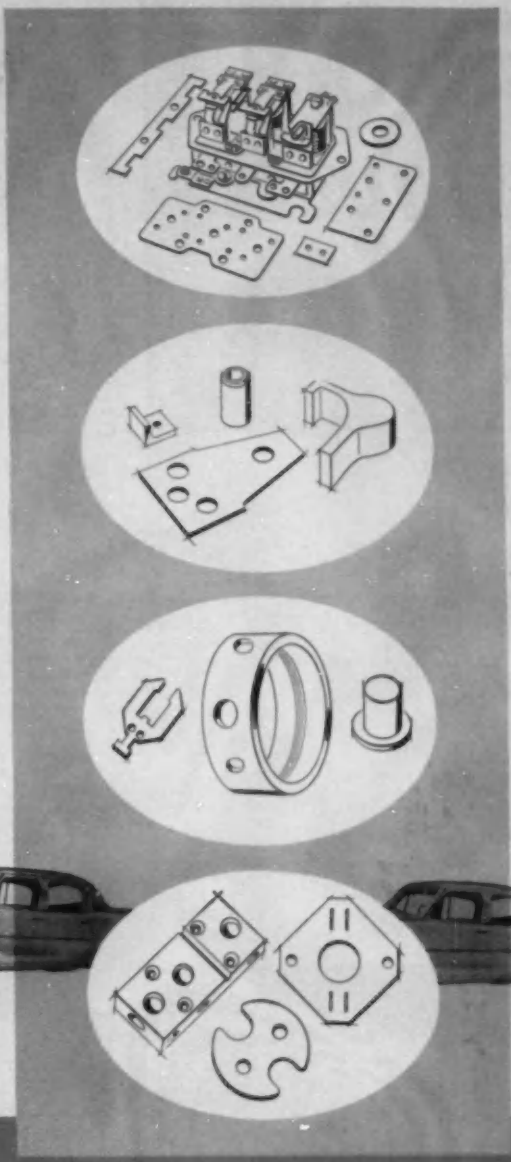
Phenolite Laminated Plastic and National Vulcanized Fibre are used in many of the major components of planes, cars, trucks, tractors, buses. Look at this list of uses . . .

IN THE AERONAUTICAL INDUSTRY

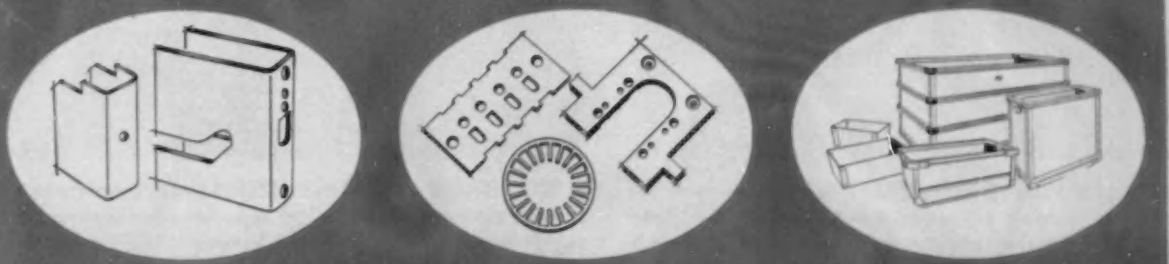
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carburetors
gears
landing gears
cowl strips
instrument panels
terminal blocks
bomb sights
bomb racks
propeller pitch controls
starting equipment
communication system
lighting equipment
ignition system
valve discs
instrument parts
connector plugs
cable guides
spacers, bushings
fuse blocks
pulleys
bomb conduits
cover plates
flapper valves
bomb rack rollers
name plates
gaskets, shims
fairleads

IN THE AUTOMOTIVE INDUSTRY

batteries
bushings
breaker arms
breaker arm bushings
clutch rings
carburetors
cutouts
fans
generator insulation
thrust washers
voltage regulators
horn insulation
starter motors
friction discs
switches
gears
water pump seal washers
gaskets
ignition coils
knobs
distributors
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partitions
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FOR AUTOMOTIVE COMPONENTS

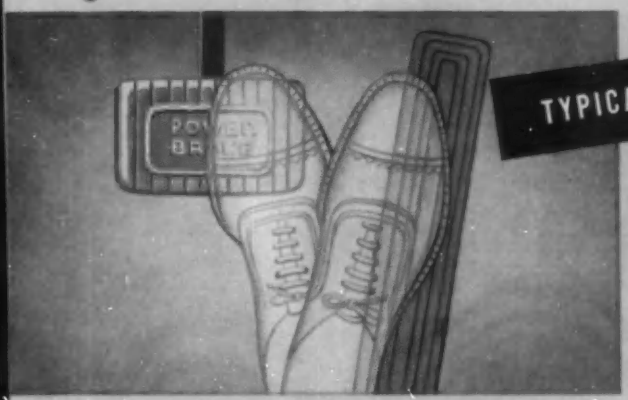
Because of long experience, serving many customers,

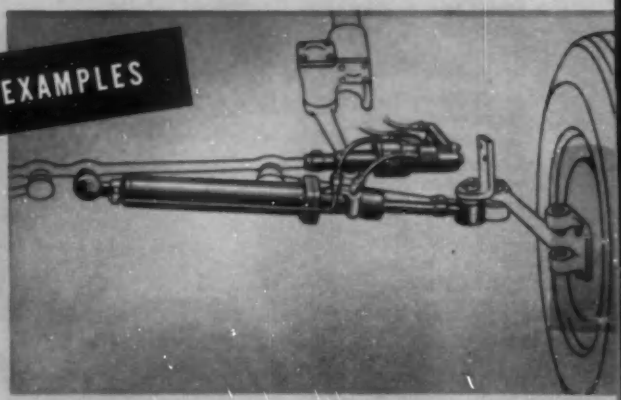
Bendix Products Division can apply much of the combined know-how of the automotive industry

to any specific project in the design and manufacture of automotive components.



TYPICAL EXAMPLES





BENDIX LOW PEDAL POWER BRAKE—Specified by more car manufacturers than any other make, Bendix* Low Pedal Power Brake makes possible quick, sure stops by merely pivoting the foot from the go to the stop control. No need to lift the foot and exert leg power to bring the car to a stop. Result—more driving comfort, less fatigue and greater safety!

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AUTOMOTIVE INDUSTRIES

March 15, 1955 Volume 112, No. 6

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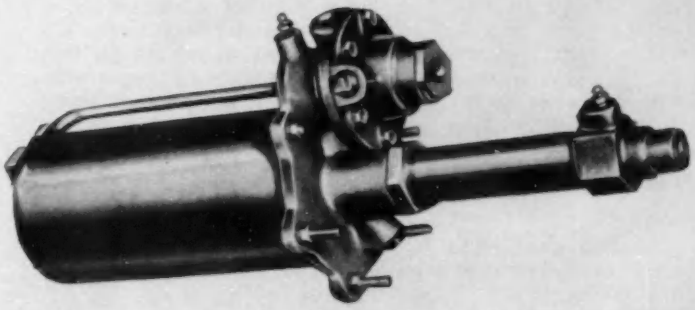
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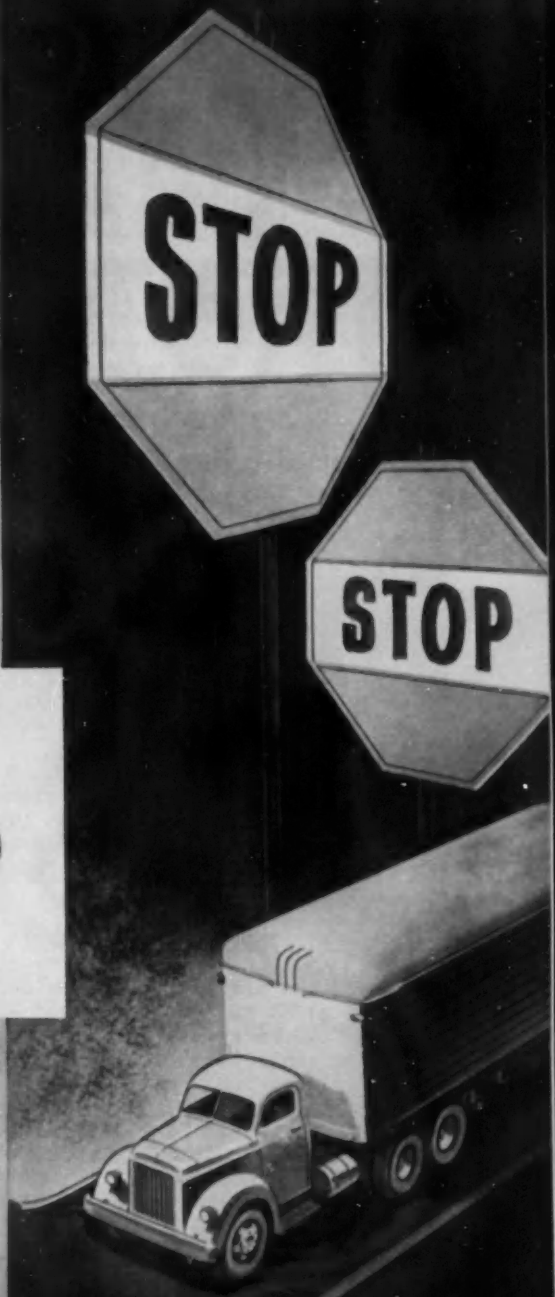
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AVIATION CORPORATION

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(Advertisement)

What's New

IN STEEL FROM STOCK

In the news today are many developments of interest to those who specify, buy or work with steel. Ways in which you can raise efficiency and lower costs in your operations may be suggested by the following summary.

7½¢ per lb. saving on stainless sheets. Rising nickel prices are bringing back Type 430 straight-chrome stainless for mild corrosion applications. 7½c price advantage is real inducement and Type 430 may also be getting consideration as insurance against any shortage of nickel-bearing types. Ryerson has anticipated renewed demand by stocking Type 430 sheets in many gauges and sizes. Technical data on request.

Low carbon plates for easy forming and welding. If you've had trouble forming or welding carbon steel plates remember—steel produced to most popular warehouse plate spec. (ASTM A7) may have up to .35% carbon. To meet this problem, Ryerson now carries plates (¾" and lighter) produced to low carbon spec. especially for good forming and welding qualities. Also on hand: more sizes—more tonnage of carbon steel bars, shapes and sheets.

Revolutionary reduction in shop costs brought about by Ryerson's New Rycut 50 is the most important news to hit the alloy steel market in years. With this new .50 carbon leaded alloy, reductions in finished part costs of 25% or more are commonplace. Machining time is often reduced as much as 75% . . . tool life extended from 100% to 300% and production increased as much as 200%—all without known loss in mechanical properties as compared with standard alloys in the same carbon range.

A leaded alloy for every application is now available in the Ryerson Rycut series. Any one of them will typically cut your costs on machined parts by 25% or more. Use Rycut 20 when you need a carburizing alloy. Use Rycut 40 when you need a .40 carbon alloy, and New Rycut 50 for .50 carbon alloy applications. Also on hand in a growing range of sizes: leaded carbon-manganese bars—low carbon, suitable for case hardening, unusually fast machining.

New Ryerson stainless solves welding problems. Both stainless sheets and stainless plates in Type 304 L and Type 316 L have recently been added to the nation's largest stainless stocks—at Ryerson. In applications involving welding and stress relieving, where carbide precipitation may occur, these extra-low-carbon stainless steels can often replace expensive stabilized types.

Save 30% with Type 302 ornamental stainless tubing. Another recent addition to Ryerson stocks, this tubing is priced substantially below comparable stainless tubing for other than ornamental purposes. Yet it is more than satisfactory for many applications such as in restaurant and hospital equipment, etc.

Same day deliveries . . . tighter quality control. On as high as 98% of all regular warehouse orders, Ryerson is now cutting and shipping steel the same or following day. And this steel is now protected by a whole new set of quality control standards. As evidence—we can furnish a certificate of analysis or a mechanical properties report for every pound of steel shipped.

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News of the AUTOMOTIVE AND AVIATION INDUSTRIES

Vol. 112, No. 6 March 15, 1955

New Plant Will Double Output Of Chrysler Automatic Units

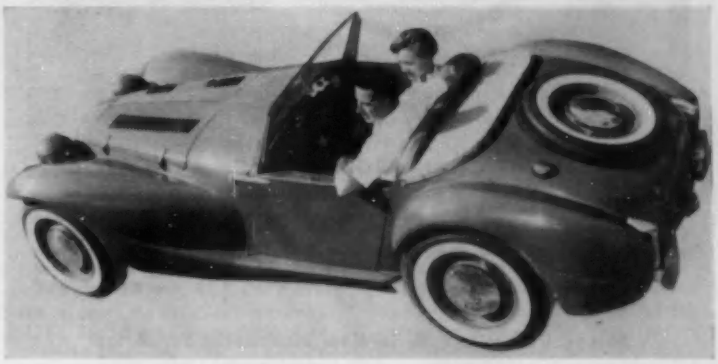
The report that Chrysler Corp. will construct a new plant near Kokomo, Ind., for production of automatic transmissions shows that more than half of the amount earmarked for the project will be expended on automation equipment. Estimated to cost $20 million, including costs of the land, building and the automatic machinery, the plant will double the corporation's capacity for the manufacture of automatic transmissions.

Equivalent in size to the corporation's automatic transmission plant in Indianapolis, which was built in 1952 to supply all Chrysler Corp. car divisions with the units, construction of the new 800,000 sq ft plant will get underway shortly. Located on a 150-acre site, the new facility will include approximately 750,000 sq ft of manufacturing space in a single-story structure and 50,000 sq ft of space for a two-story administration building.

The plant will employ about 3500 persons and will have a potential annual payroll of $15 million. Chrysler operates another plant at the same site for production of standard transmissions for cars and trucks.

Hudson's Offer to Ex-Aides Draws Only 23 Candidates

The offer of Hudson Motors to rehire employes laid off when the company transferred its operations to Wisconsin last October has drawn only 23 of the 8000 workers who were employed at the Detroit plant. Of the 8000, Hudson still employs about 3000 in Detroit at its Special Products Div., which turns out defense items. The other 5000 were laid off when Hudson merged with Nash and moved its automobile manufacturing work to Nash plants in Wisconsin.



PLASTIC SPORTSTER WITH STUDEBAKER ENGINE

Manufactured by the Glasspar Co., the Ascot reinforced plastic sports car has a body molded from fibrous glass and Vibrin. The latter is a polyester resin made by the Naugatuck Chemical Div. of U. S. Rubber Co. Other molded parts include the detachable fenders, radiator shell, floor assembly, trunk, and trunk door. The car is powered by a Studebaker Champion engine and has an overall weight of 1750 lb.

GM Indicates Stand on Annual Pay Plan

General Motors Corp. is the first automobile company to go on the record with any kind of opinion on the forthcoming demands by the UAW-CIO for a guaranteed annual wage. In a carefully worded statement preceding its 1954 annual report, GM outlines a position which it very well may take when negotiations start about the first of April.

Basically, GM's stand is that it has gone a long way toward stabilizing employment through: premium overtime pay for workers during periods of peak demand to help carry them during slack periods; and by scheduling its model changeovers last year at a much earlier date to stimulate demand during the winter months.

The statement, signed by Alfred P. Sloan, Jr., chairman of the board, and H. H. Curtice, president, points out additionally that state unemployment compensation systems already are in existence and, in all but two instances, are financed solely by contributions from employers. The statement adds that payments from these funds are not subject to Federal or state income taxes.

While the GM statement at no point indicated a flat rejection of a guaranteed annual wage plan, it does indicate that GM will take the position that existing unemployment compensation systems provide the basis for meeting the needs of income for workers during periods of unemployment. Starting from that point, any number of possible compromises would be possible.

Consensus in the automobile industry is that some concessions will be made, but it is still far too early to speculate on just what direction these will take. The whole issue of whether or not a strike will be called against one or more of the companies—probably either GM or Ford—rests entirely upon how adamant a stand the union takes on the kind of guaranteed annual wage it has been talking about.

News of the AUTOMOTIVE



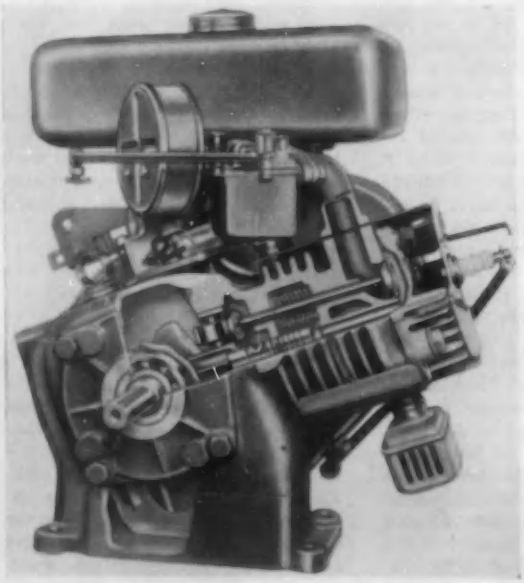
DRAWING OF ENLARGED CHILTON OFFICES

Construction has been started on enlargement of the Philadelphia plant and offices of The Chilton Co., publishers of Automotive Industries and 11 other business papers. The expansion project calls for the addition of two floors to the west end of the present block-long Chilton building and will provide 44,800 sq ft of additional useable space. Six Chilton publications, which now have their headquarters in New York City, will be moved to Philadelphia when the enlarged facilities are completed.

Bell to Design and Build New Helicopter for Army

First phase of a new Air Force contract with Bell Aircraft Corp., calls for the company to do preliminary engineering and build a mock-up of an Army utility helicopter. A subsequent contract is to provide for purchase of a limited number of the helicopters for testing.

The 212 is to be a lightweight, single-rotor plane with a closed cabin. It will have a payload of 800 lb, a cruising speed of 100 knots, hovering ceiling of 6000 ft, and a climbing speed of 1500 fpm. Development work is to be done at the Bell Helicopter Div. plant in Fort Worth, Tex.



Continental Model AU85 aircooled engine.

Ford Ohio Parts Plant To Feature Automation

Ford is continuing its expansion program with a new multi-million automotive parts plant for its Parts and Equipment Div. at Sandusky, O. It will be the first new facility for that division since 1953.

Although design details of the new plant have not yet been completed, manufacturing and engineering studies underway indicate that the most modern materials handling and automation equipment will be installed. The facility will occupy 600,000 sq ft of space on a 180-acre site.

Part of Ford's $1.7 billion postwar expansion program, the Sandusky unit will be the company's third largest automotive parts manufacturing plant and will bring total space for such operations to more than 1.6 million sq ft. The company operates eight other parts plants—seven in southeastern Michigan and one in Green Island, N. Y.

Construction on the new plant is scheduled to start this spring. It is expected to be completed by the middle of 1956.

Continental AU Engines Have Numerous Refinements for '55

Improved performance, higher dependability, and extreme compactness characterize the new 1955 Continental AU series of heavy-duty aircooled engines. The line includes what is said to be the lowest-silhouette power plant of its type at the 3-hp level—the 13¼-in-high Model AU85 (see illustration).

Refinements include new shell-molded intake manifold and ports; Carter center-bowl type carburetor; larger-diameter intake valve; and higher cooling capacity.

Continental now has available an automatic ignition cut-off, which stops the engine if the level of the lubricating oil falls below a safe operating level. Also available are AU Series models for operation on kerosene.

Improvement in the recoil starter does away with the need of meshing gears. The starter assembly now grips the outside of a nut on the end of the engine crankshaft.

AND AVIATION INDUSTRIES



HUGE DIAMOND PRESS

Shown here is the 1000-ton press at the General Electric Research Laboratory in which GE scientists recently produced man-made diamonds. The giant unit achieves high pressures of 100,000 atmospheres or 1.6 million psi. It is expected that eventually, provided costs can be reduced, the diamonds will be used in industrial tools for cutting and polishing operations.

Kaiser Outlines Plan For Pension Benefits

The plan announced by Kaiser Motors Corp. on how its pension program will operate for the benefit of former employes marks a significant step in preserving the pension rights of workers. Although still preliminary, the plan, outlined to ex-employes who were put out of work when the company abandoned operations at Willow Run and other Michigan plants, gives the workers an idea as to how they will receive their pensions when they retire.

Set up shortly after the former employes lost a suit against the company to split up the $6 million Kaiser pension fund, the program specifies that the company will continue present pensions for all employes who are retired. In addition, it provides pensions at the present rate to former employes who have reached 65 years of age and who have five or more years of service, even if they have not yet retired. It also provides vested pensions payable at 65 to former employes under 65 who have five or more years of service.

AI TABLOID

Special two-tone models in the 1955 Ambassador and Statesman lines are now on display in Nash dealerships throughout the country.

* * *

Rochester Products Div. of General Motors Corp. has redesigned all packages containing carburetors, car lighters, and smaller spare parts.

* * *

Douglas Aircraft Co. will establish a new division at Charlotte, N. C., for expanded production of the Nike guided missile . . . Electric Storage Battery Co. has set up a new Research Div.

* * *

General Electric Co. is planning a five-year, $40 million program for research and development of present and new types of aircraft gas turbines.

* * *

Tractor and Implement Div. of Ford Motor Co. has announced production of four models of a new lightweight, six-ft combine.

* * *

Twin Coach Co. is moving all aircraft parts production at its Kent, O., facility to its Buffalo, N. Y., plant.

* * *

Standard Pressed Steel Co. has acquired a neighboring 100,000 sq ft plant of a former radio and television cabinet manufacturer in Jenkintown, Pa. . . . Canadian Engineering & Tool Co. has purchased a new plant in Oakville, Ont.

* * *

Manufacturers of cemented carbides containing tungsten have formed the Carbide Producers Association. Affairs of the new trade group are being handled by Hunter-Thomas Associates, 2130 Keith Bldg., Cleveland 15, O.

Goodyear Tire & Rubber Co. has developed a tubeless tire for large-size trucks on up to heavy earth-moving equipment.

* * *

Duralastic Products Co. is said to have developed a process which uses plastic dies, instead of the metal dies generally used, for making prototypes of plastic products.

* * *

Houdaille-Hershey Corp. has split its Buffalo, N. Y., operations into two independent units called the Aircraft Div. and the Ride Control Dept., Automotive Div.

* * *

Stockholders of Bellanca Aircraft Corp. have voted to acquire certain assets of L. Albert & Son, a builder and supplier of rubber mill and plastic molding machinery.

* * *

Amphibious floats of new and advanced design have been developed by Edo Corp. They are specifically intended for aircraft in the Cessna 180 class.

* * *

Ford Motor Co. has completed an 80,000 sq ft expansion of its Buffalo, N. Y., stamping plant. . . . Electric Auto-Lite Co. has finished a $2 million expansion and modernization program at its Sharonville, O., bumper plant.

* * *

Cummins Engine Co. announced that it has again increased its engine production. It also disclosed that a new addition to the research laboratory should be completed by May 1.

* * *

Utica Div. of Bendix Aviation Corp. has opened a new $100,000 facility at North Hollywood, Calif., for engineering, sales, and servicing of its products.

(*Turn to page 492, please*)

News of the AUTOMOTIVE



KING-SIZE AUTOMATIC FURNACE

This giant normalizing and full annealing furnace at Nor-Cote, Inc., Van Dyke, Mich., is said to be completely automatic. It has an electronic temperature control; air injection for cooling; electric cranes for loading furnace car; and electric scales which compute automatically a direct reading of each job. Any number of parts up to 100 tons, not exceeding 30 tons each, can be handled by the car and furnace at one time. Inside dimensions are 11 ft, six in. high; 14 ft, one in. wide; and 40 ft long.

Current Car Output Tempo Seen Until Third Quarter

It appears now that the hot production pace in the automobile industry will not level off until the end of the second quarter. It is then expected to settle down to a normal pattern during the third and fourth quarters.

Barring labor difficulties, production of cars should easily reach the four million mark at mid-year. From all present indications, it should surpass the most optimistic figure that the industry predicted for mid-1955 at the beginning of the year. Some industry sources look for total 1955 output to exceed six million units.

Although automobile manufacturers at present are producing at an annual rate of eight million cars, schedules for output of four million units for the first half of the year could, of course, be entirely upset should a strike result over the union's demands for a guaranteed annual wage. Industry leaders, at present, however, appear confident about the market picture, and have hiked production goals for March by 10 per cent. All indications point toward production of at least two million cars during the first quarter, which would be the highest quarterly output on record.

Sales Outlook Remains Bright

While part of the current output is required to build up dealer stocks for spring, sales are clipping along at such unprecedented pace that they are expected to surpass 1.5 million for the first quarter. Thus, dealer inventories would stand at only 500,000 cars as the industry enters its second quarter.

The rash of reports of record retail sales continue to pour forth from factories. General Motors revealed an all-time record for retail sales of new and used cars through Feb. 20.

While not reporting any figures, Ford said its car sales during the first 20 days of February broke all previous records established in that period. At Chrysler Div., retail sales for the first 10 days of February soared almost 51 per cent over the same period last year for a total of 4612 units, compared with 3056 in the same 1954 period. From Jan. 1 to Feb. 20, Mercury tallied car sales at 44,000 units, about 2000 more than in the comparable 1954 period.

Extensive GMC Truck Line Includes Many New Features

A complete line of 128 truck models, said to be entirely new in engineering design and styling, has been launched by GMC Truck & Coach Div. of General Motors Corp. Incident to this announcement, GMC has introduced two V-8 engines which will be offered in a group of 44 models.

A 288 cu in. V-8 develops 155 hp, while a 324 cu in. V-8 is rated at 175 hp. In addition, all GMC six-cylinder engines have undergone detailed changes for an increase in power ratings throughout the line.

Due to a demand from the field for automatic drives, GMC has extended the application of Hydra-Matic transmissions to 65 models. Only 13 models last year offered the unit.

New C-O-E Diesel series—DF860-67 and DFW820-67—will feature a new version of the 6-71 Diesel engine. With its power rating in the range of 175 to 185 hp, this engine is lighter in weight due to the use of aluminum for many parts. In addition, it will be fitted with a special two-plate, 14-in. clutch to meet the requirements of heavy-duty operation. Three other GMC engines will also be fitted with this clutch.

One of the major contributions for 1955 is the introduction of "dual-purpose" trucks on 32 models. These are said to combine the advantages of C-O-E design from the standpoint of big payload capacity and maneuverability along with the cab and engine accessibility of conventional trucks. All of these models, except in the 650 series, have a 90-in. bumper-to-back dimension; those in the 650 series have a 96-in. dimension.

Another interesting feature of the line is a "Fleet" series light duty truck in the half-ton through one-ton class. It has all the basic features of the "standard" and "deluxe," but without the trim and special appearance features of the latter two.

AND AVIATION INDUSTRIES

Plymouth V-8 Engine Plant To Start Output This Year

Chrysler is spending from $45 million to $50 million, most of it for machine tools and related production equipment, for a new Plymouth V-8 engine plant. It will be located in the Automotive Body Div. facility on Mound Road in Detroit, which is being expanded by 70,000 sq ft of new construction to bring total floor area to 530,000 sq ft.

Aircraft work has been moved out of the facility to the Chrysler jet engine plant to make room for the new operation. Some machinery already is in place, and the plant will be in production late this year with a capacity of 3000 engines a day on a two-shift basis.

Six-cylinder engines will continue in production at the Lynch Road plant, so that combined six- and eight-cylinder engine capacity will be in excess of 6000 units a day. Plymouth V-8 engines currently are being produced at Dodge Div.

Ultra-Modern Equipment Ordered

The new plant will utilize the latest automatic production machinery and equipment. Most of the tools are scheduled for delivery within the next 60 days. Plymouth has been working closely with vendors to speed up delivery dates and will have most of its tools within a year from the time the first orders were placed last June.

Of particular interest will be the use of four giant mechanical broaches to mill top, bottom, and both ends of the cylinder block. The machines measure 12 ft high, nine ft wide, and 59 ft long. Another unusual feature of the plant will be the method of ventilation of machines. Dust and metal chips will be sucked downward through the base of the machine to under-floor chip disposal units.

Layout of the plant comprises a cross-flow production pattern in which castings are moved in at one end and rough steel at the other for processing and channeling laterally to machine and assembly operations in the central area. Cylinder block machining will be done on two lateral lines—each more than a quarter of a mile long and encompassing 157 operations on 70 machines.

Four separate lines 400 ft in length with 67 different operations will be used for machining cylinder heads. Crankshaft operations will be done on a single line ½ mile long. Two dynamometers and 76 engine test stands will be installed at the ends of the assembly lines.

TWO MONTHS OUTPUT OF ALL MAKERS AHEAD OF 1954

1955 Passenger Car Production

As reported direct to Automotive Industries by the car factories

	February 1955	January 1955	February 1954	Two Months 1955	Two Months 1954
Hudson	6,059	2,975	1,302	9,034	3,399
Nash	9,698	4,462	6,258	14,160	14,890
Total—American Motors	15,757	7,437	7,960	23,214	18,270
Chrysler	17,063	17,470	10,622	34,533	21,241
De Soto	14,087	13,489	6,445	27,476	14,705
Dodge	31,362	32,797	8,961	64,159	19,796
Plymouth	68,068	64,046	24,380	132,114	60,534
Total—Chrysler Motors	130,530	127,792	90,428	258,312	116,329
Ford	137,175	143,761	115,985	280,936	234,672
Lincoln	3,709	2,906	3,750	6,615	8,340
Mercury	34,870	32,363	25,831	67,233	56,903
Total—Ford Motors	175,754	179,050	145,566	354,804	298,915
Buick	64,117	62,427	42,002	126,544	90,085
Cadillac	13,487	14,136	9,510	27,632	13,529
Chevrolet	183,483	184,617	110,883	368,010	227,616
Oldsmobile	50,257	48,416	32,133	98,673	51,926
Pontiac	49,602	48,000	30,740	97,602	63,574
Total—General Motors	330,966	327,496	225,778	658,461	437,634
Packard	6,230	4,983	3,986	11,223	7,667
Studebaker	14,912	11,796	7,475	26,708	18,089
Total—S-P Corp.	21,142	16,779	11,473	37,931	25,756
Kaiser			932		980
Willys	1,497	1,131	1,439	2,628	1,482
Total—Willys Motors	1,497	1,131	2,371	2,628	2,448
Total—All Makes	675,646	659,704	443,195	1,335,350	899,904

Fabricating Machinery Forum To be Sponsored by Vickers

The 1955 Fabricating Machinery Hydraulic Conference, sponsored by Vickers, Inc., has been scheduled for May 17 and 18. It will be held at the Hotel Statler, Detroit, Mich.

Attendance at the conference will include representatives from the manufacturers and users of metalforming machinery, die casting equipment, presses, welding machinery, and plastics injection molding equipment. Open forum-type discussions will cover oil hydraulic systems and system problems for the foregoing types of machinery, with special emphasis on maintenance, installation, hydraulic fluids and seals.

Aircraft Production Booming In Western Section of Nation

Production of military aircraft continues to represent approximately 90 per cent of the industry's business in the Western states. In the commercial field of transport aircraft, U. S.-built airplanes lead the world by a wide margin.

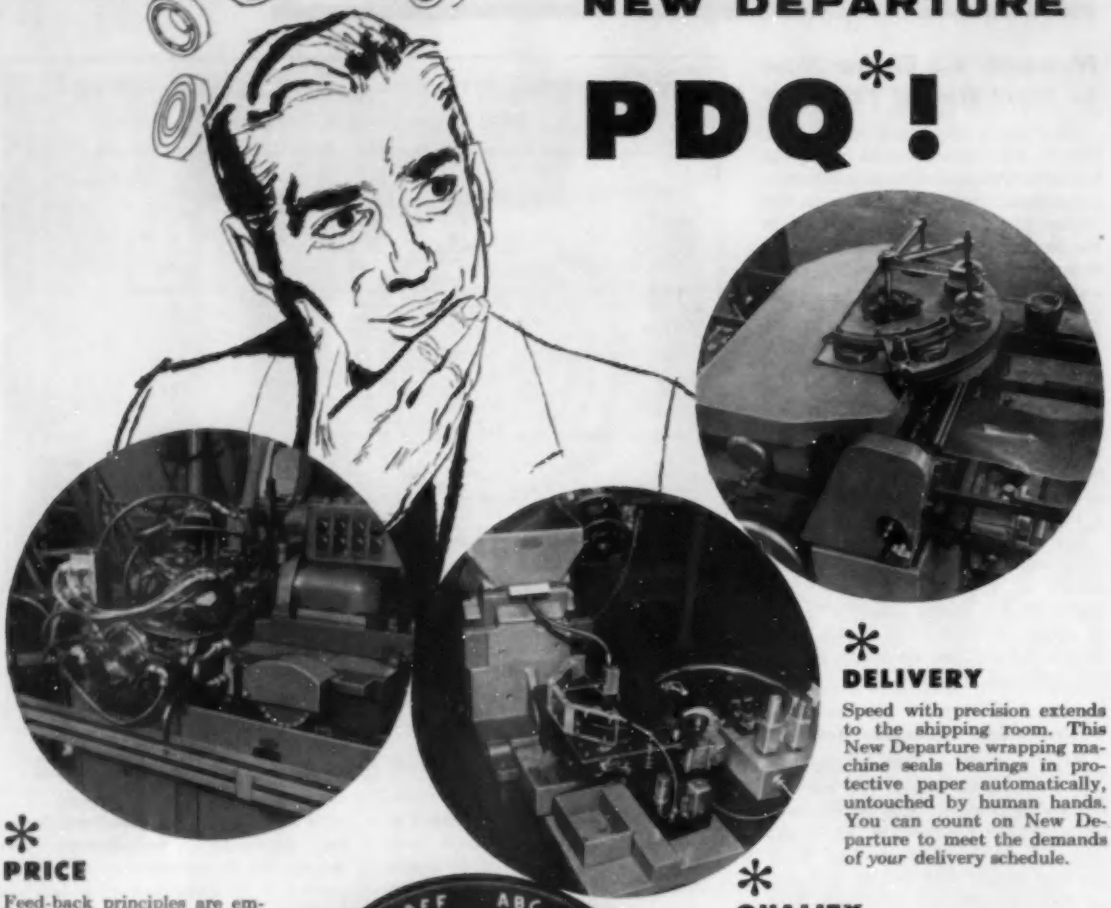
In 1954, 191 units of 36-passenger (or larger) aircraft, all built by Southern California aircraft companies, were delivered These 191 units had a sales value of more than $251 million and represent one of the best years of commercial business to date. A backlog of commercial craft of this type consisted of 190 units with an estimated sales value of nearly $270 million at the beginning of 1955.

Continued on Page 79

BEARING PROBLEMS? ------Call on

NEW DEPARTURE

PDQ*!



*

PRICE

Feed-back principles are employed in this ball race form grinder at New Departure. The machine automatically adjusts to maintain specified tolerances. More perfect pieces per hour mean lower costs for the bearing user.

*

DELIVERY

Speed with precision extends to the shipping room. This New Departure wrapping machine seals bearings in protective paper automatically, untouched by human hands. You can count on New Departure to meet the demands of *your* delivery schedule.

*

QUALITY

Quality control is of prime importance in the high-volume, ultra-precision manufacture of ball bearings. Balls are automatically inspected by an electronic scanning device that operates with a speed and accuracy considered to be impossible a few years ago.



PLUS ENGINEERING SERVICE

New Departure engineers are ready to help with your ball bearing problems. And when you consult with New Departure you get the benefit of more than 50 years' experience in ball bearing design and manufacture. Call, wire or write . . . New Departure can help you . . . PDQ!

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.

NEW DEPARTURE

BALL BEARINGS

NOTHING ROLLS LIKE A BALL

News of the AUTOMOTIVE AND AVIATION INDUSTRIES

Continued from Page 77

Station Wagon Output Hit Peak Last Year

Station wagons continue their steady gain in popularity. Production last year hit 364,234 units, an all-time high and up substantially over the 318,178 units produced in 1953, the previous best year. The number of station wagons built on truck chassis is dropping off, however, in accounting for only 14,784 units last year, compared with nearly 21,000 in 1953.

Federal Truck Makes Plans For First Overseas Plant

The plan by Federal Motor Truck Co., Detroit, to set up a truck plant in Turkey is another in a series of moves by the company to strengthen its position in the truck field. Back to normal operations after several changes in ownership during the past year, Federal has made an agreement with the Turkish government to operate a truck manufacturing plant near Ankara which, in two years, will have the capacity to turn out 5000 trucks annually.

To be known as Federal-Turk Kamyonlari Anonyme Societe, the plant, which will have an initial capital of $7 million, will be the first one set up by Federal abroad. It will also put Turkey into the production of trucks for the first time in its history.

Operating Details Presented On Ford Heating-Cooling Unit

Further details on the operation of the new Ford combined heating and cooling air conditioner for its V-8 passenger cars (see AI, March 1, page 16) are now available. The accompanying diagram of the Selectair unit will serve to illustrate the location of the various components and their functions described below.

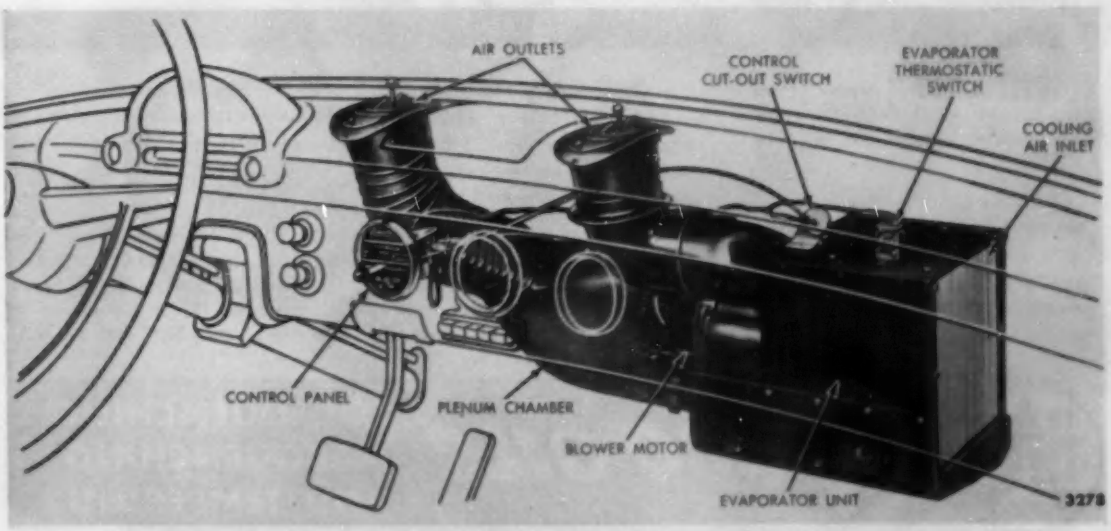
Outside air enters a screened inlet through an air duct intake located back of the grille on the right hand side and flows through a "T" air valve mounted inside the engine compartment. From here it is channeled either through the heating element or the cooling unit into an evaporator chamber equipped with a double outlet blower, as shown in the drawing.

One outlet delivers air to a plenum chamber, while outlets at the bottom direct the air flow down along the front seat compartment floor of the car. From the left-hand end of the plenum chamber a flexible duct extends up to a register located at the left side of the radio speaker grille on top of the instrument panel.

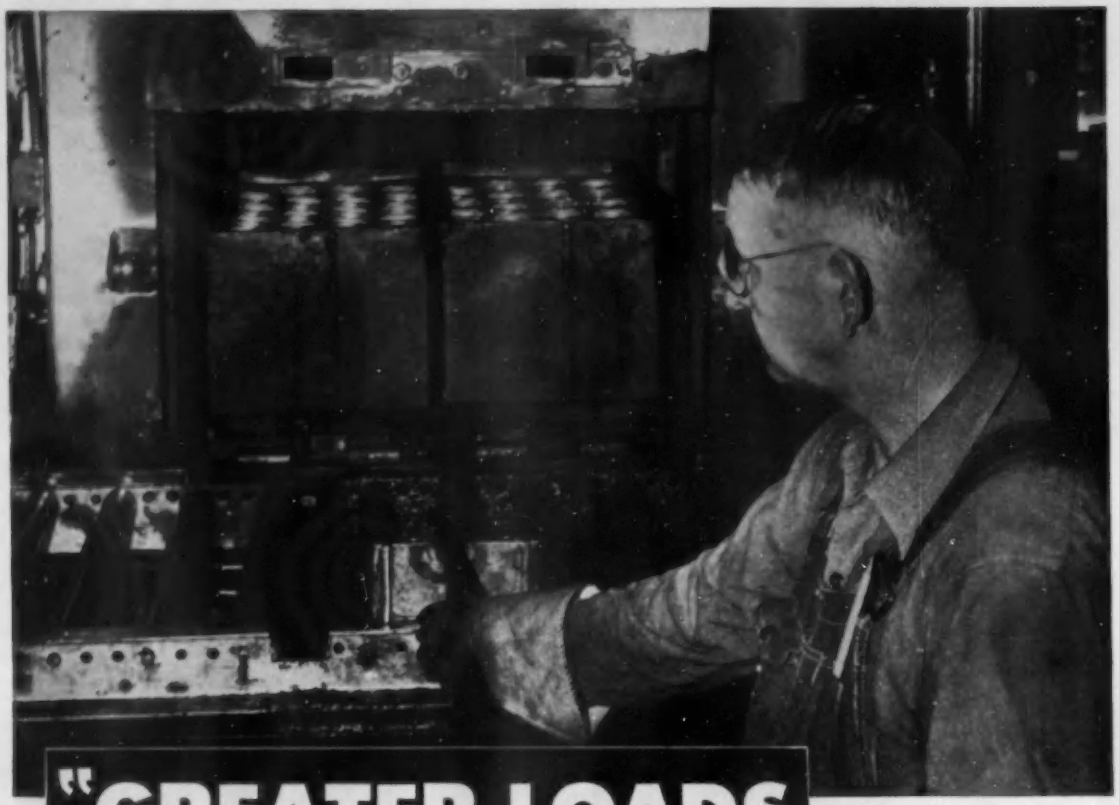
A similar duct, from the blower's second outlet, directs air up to another register at the right side of the radio speaker grille. Each register has two outlets. The rear one, a simple flapper, or damper, allows a concentrated air flow to be directed backward and down, or it can be shut completely. The forward outlet is circular in shape and has directional louvers.

A center knob provides complete shutoff of air flow. The circular outlets can be rotated a full 360 deg, so that air flow can be directed wherever desired. They can be directed to any spot on the windshield for defrosting.

Continued on Page 81



Diagrammatic view of Selectair heating and cooling air conditioner for Ford V-8 passenger cars.



"GREATER LOADS ... MINIMUM DISTORTION"

Warner Gear Division, Borg-Warner Corp., Muncie, Indiana, reports on Texaco Marquenching Oil

WARNER GEAR notes great improvement in quenching results since *Texaco Marquenching Oil* was introduced.

"Results have been far beyond our expectations," says the company's report. "With Texaco Marquenching Oil we are handling greater loads than we ever could with ordinary quenching oils and of greater importance are getting less distortion. We like Texaco Marquenching Oil so much that we are extending its use to our other plants."

Other companies are getting similar results with *Texaco Marquenching Oil*. Users say it assures them the desired microstructure, reduces distortion and gives uniform hardness—all at a lower cost. *Texaco Marquenching Oil* is made especially for this service. It has outstanding oxidation-resistance, is always uniform in quality, and has a high flash point.

Let a Texaco Lubrication Engineer give you the full story. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO OILS FOR QUENCHING MARQUENCHING AND TEMPERING

TUNE IN: TEXACO STAR THEATER starring JIMMY DURANTE or DONALD O'CONNOR, on TV Sat. nights. METROPOLITAN OPERA radio broadcasts Sat. afternoon.

News of the AUTOMOTIVE AND AVIATION INDUSTRIES

Continued from Page 79

Ford Aide Explains Reasons For Farm Machinery Emphasis

The question as to why Ford decided to put its Tractor and Implement Div. into the farm machinery business full tilt last year, despite uncertainties in national farm policies, mounting crop surpluses, and softening in prices of farm products has been answered in part. Irving A. Duffy, vice-president in charge of the Tractor and Implement Div., stated recently that company launched the venture, among other reasons, because of the increasing need for farm products and population growth.

It is entirely probable, Mr. Duffy believes, that the problems caused by farm surpluses will substantially disappear as research finds new uses for agricultural products. Improved tools and techniques are making it possible for the farmer to emancipate himself from long hours of physical labor, Mr. Duffy notes. Future prosperity, he said, will depend on the farmer's success.

Ford expects to announce soon a number of additional major farm implements which it believes will expand its market substantially. The company attributes a major share of the credit for its increasing tractor volume to its new line introduced recently.

Motor Products Sells Marion, O., Facility

Now that Motor Products Corp. has sold its plant in Marion, O., the company will transfer the automotive operations of that unit to Detroit. The 250,000 sq ft plant, built in 1950, was sold to Whirlpool Corp., St. Joseph, Mich., which will convert it to the manufacture of appliances.

Novel Cars of Many Countries Displayed at Auto Sports Show

Cosmopolitan in the scope of its travel and automotive exhibits, the third annual Universal Travel & Auto Sports Show drew throngs of visitors to Madison Square Garden in New York City last month. On hand was a sizable array of futuristic, foreign, domestic, sports, and custom cars.

Aside from the unique three-wheeled vehicles (see illustrations), such unusual models as the Valkyrie (see AI, Feb. 15, page 36) and the Italian B.A.T. with aerodynamic styling attracted much interest. Other novel cars in the show were the 1955 Abarth Competition Spyder, 1100, the Monte Carlo with Pinin Farina styling, and a $25,000 custom Chrysler Imperial.

Special vehicles on display included a three-wheeled electrically powered Caddy-mobile for golf courses and a French portable motorcycle with a two-stroke gasoline engine that folds into a suitcase weighing 60 lb. It is said to attain a top speed of 47 mph and get 180 miles to a gallon of gasoline.

An interesting sidelight of the show was the bestowing of honors on Studebaker-Packard Corp. for its automotive achievements. Studebaker was given a gold cup award for styling and design excellence of its Ultra Vista and sports models, while Packard was honored for individuality of styling in the Four Hundred hardtop and for development of the torsion bar suspension system.

(*Turn to page* 504, *please*)



THREE-WHEELERS ARE FEATURED AT AUTO SPORTS SHOW

Attracting much attention among the small cars at the Universal Travel & Auto Sports Show were the new three-wheeled Tri-Car (left) and the Messerschmitt Model KR-175. The former is being built in three models, two of which have reinforced plastic bodies. It is powered by a two-cylinder, aircooled Lycoming C2-90 engine with an output of 30 bhp at 3000 rpm, compression ratio of 6 to 1, and displacement of 88 cu in. Car is 117 in. long, 56 in. high, weighs 1100 lb, and has a wheelbase of 75 in. B. F. Goodrich torsilastic suspension and Westinghouse-Schneider torque converter are used. The Messerschmitt is powered by a single-cylinder, aircooled, two-stroke Fitchel & Sachs rear engine. Compression ratio is 6.6 to 1; displacement, 10.6 cu in.; and maximum output, 9½ bhp at 5250 rpm. Car is 111 in. long; 48 in wide; 47 in. high; weighs 485 lb; and has a regular normal wheelbase of 80 in.

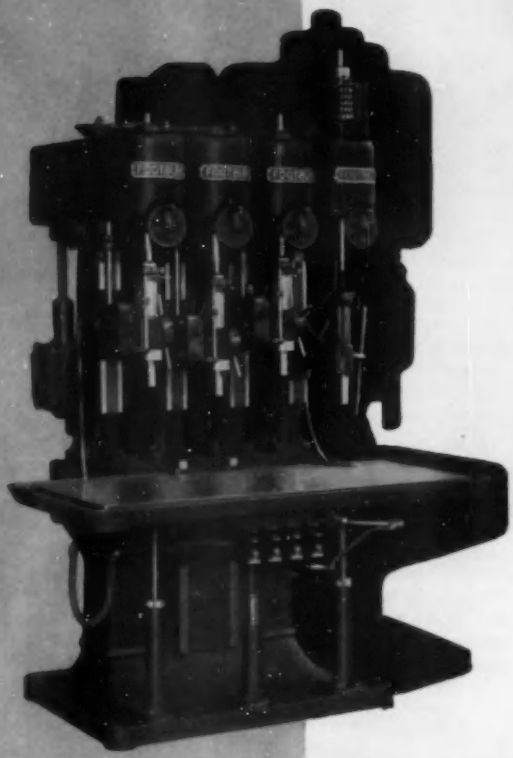
FOOTBURT

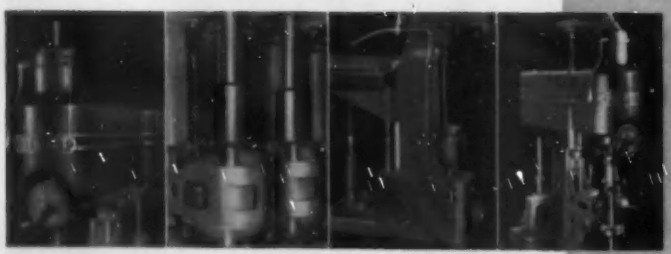
sensitive drilling machines

A FULL RANGE
DRILLING MACHINE
ENGINEERED FOR PRODUCTION

Built carefully to provide the required accuracy for fine tool room work, Footburt Sensitives are designed with the weight and stability to maintain close tolerances on day after day production work. The correct speed for a wide range of drilling, reaming, and counterboring operations is instantly available. Write for full information on this great line of Sensitive Drilling Machines. Built in 1, 2, 3, 4, 6 Spindle Models.

THE FOOTE-BURT COMPANY
Cleveland 8, Ohio
Detroit Office: General Motors Building





No. 2 Machine with Back Gear • 12" Overhang • ⅝" Drilling Capacity in Steel • Optional Speed Ranges • 185 to 2300 RPM • 280 to 3450 RPM • Vertical Motor Drive with Standard Single Speed Motor • Power Feed Assembly • Tapping Attachment • Coolant Outfit.

engineered for production

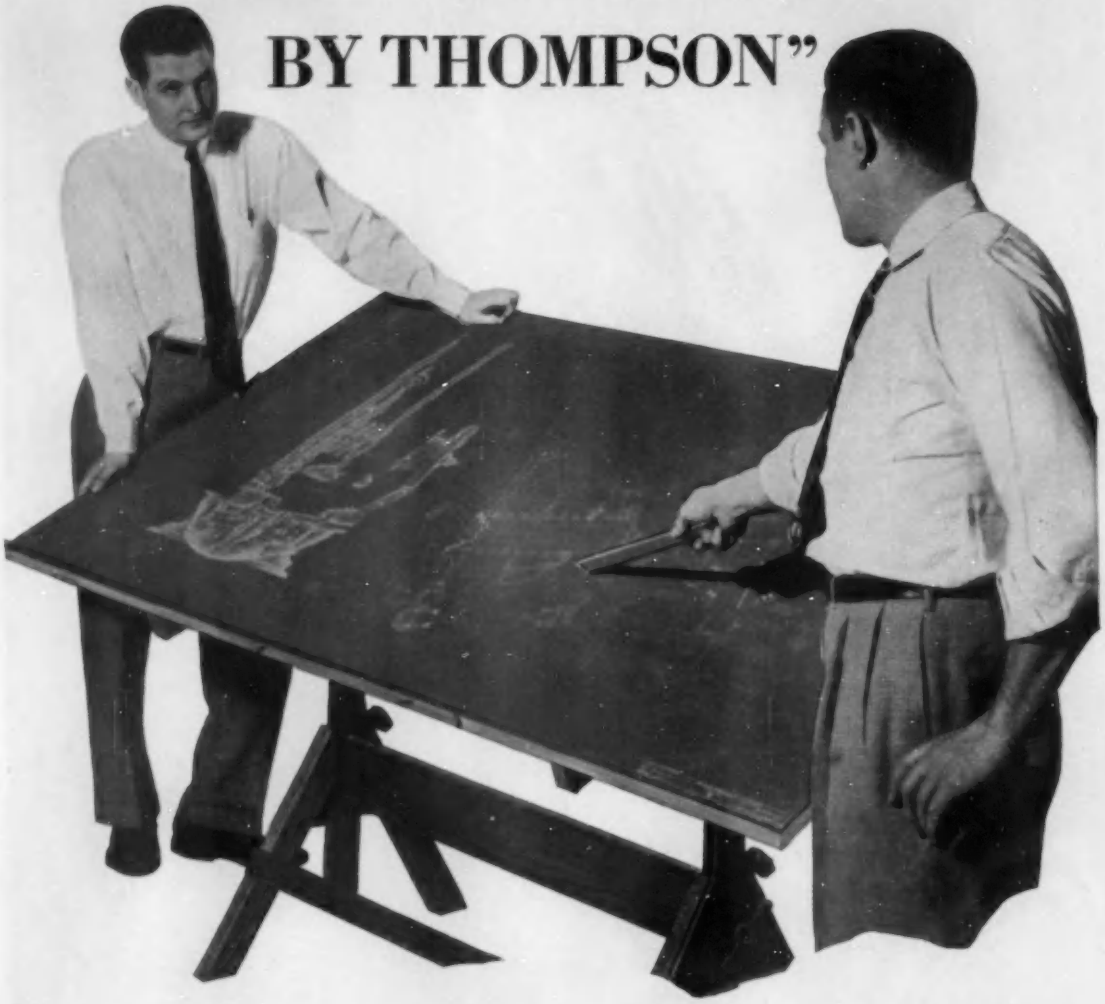
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MACHINE TOOLS


"To the success of your mechanism"
WALLACE BARNES COMPANY
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THE WILLIAM D. GIBSON COMPANY
1800 CLYBOURN AVE. CHICAGO 14.
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CORRY, PENNSYLVANIA
BARNES-GIBSON-RAYMOND
40300 PLYMOUTH RD. PLYMOUTH, MICH.
B-G-R COOK PLANT
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SEABOARD Coil Spring Div.
15001 S. BROADWAY GARDENA, CALIF.
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HAMILTON CANADA

"Let's be sure to specify

STEERING LINKAGE BY THOMPSON"



MORE and more automotive manufacturers today specify "Steering Linkage by Thompson" when designing and planning their cars, trucks, buses and tractors of tomorrow.

And for good reason—for they've learned that "You Can Count on Thompson" as a dependable source of supply. And they've learned, too, to count on Thompson for important developments in ball joint design, for steering linkage, as well as other applications. Thompson's steering linkage units are in yesterday's cars and today's cars. And they'll be in tomorrow's cars, too.

Typical of these developments is the revolutionary Thompson-engineered front suspension ball joints, the greatest advance in automotive front suspension in 20 years. For over 50 years Thompson has played an important role in the automotive world.

If you use steering linkage assemblies, specify "Steering Linkage by Thompson". For details on how Thompson's skilled steering engineers can help you with your steering linkage developments, write, wire or phone Thompson Products, Inc., Michigan Div., 7881 Conant Ave., Detroit 11, Michigan, WA 1-5010.

Thompson Products

MICHIGAN DIVISION

DETROIT • FRUITPORT • PORTLAND

Assembly operation eliminated

The old way:

This vise handle was originally cut from bar stock by screw machine. One end of the handle was threaded while the other was machined to a ball head. To complete the assembly a separate internally threaded ball head had to be screwed onto the threaded end by hand.

The National way:

Our "Special Products Service" showed how this vise handle could be produced faster and at lower cost by cold heading. The handle and one head were cold formed to required dimensions. Then, the handle was inserted through the drilled hole in the head of the jaw adjusting screw and the other end was hand headed. Result... substantial savings in material and production costs.



Ball threaded to end was often lost in use.



Ball ends can't shake loose because one is cold formed and the other is hand-headed on handle.

Bring your "Special" problems to National

National has the experience and wide range of cold heading equipment needed to solve many "special" problems. Our "Special Products Service" representative will be glad to study your requirements. Write for free copy of National's "Special" fastener booklet.





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Chicago	Kansas City, Mo.	Philadelphia
Cincinnati	Lansing	Rochester
Denver	Milwaukee	San Francisco
Detroit	Minneapolis	Seattle
Indianapolis	New York	St. Louis

THE NATIONAL SCREW & MFG. COMPANY
Cleveland 4, Ohio

Pacific Coast: National Screw & Mfg. Co. of Cal.
3423 South Garfield Ave., Los Angeles 22, Cal.

National PRODUCTS

Fasteners  Hodell Chains  Chester Hoists 

Men in the News



American Motors Corp. — Howard E. Hallas has been appointed public relations director, succeeding Fred L. Black, now special assistant to the president.

Walker Manufacturing Co. — **William Jasperson** and **Wayne Rapp** have been made sales managers of the Original Equipment and Wholesale Divs., respectively. **Harold Johnson** has advanced to assistant sales manager of the former, while **Robert E. Archer** has become field sales manager of the latter division.

Detroit Diesel Div., General Motors Corp.—**Semon E. Knudsen** has been appointed general manager.

Chrysler Corp.—**Robert T. Keller** has been placed in charge of West Coast automotive plant operations.

Rochester Products Div., General Motors Corp.—**E. A. Kehoe** has been appointed director of quality control.

Kellett Aircraft Corp.—**James T. Duffy, Jr.**, has been elected president.

Hudson Motors Div., American Motors Corp.—**John R. Pichurski** has been appointed public relations director.

Harrison Radiator Div., General Motors Corp.—**Edward D. Rollert** has been appointed general manager. He succeeds **Douglas B. Whitney**, retired.

Ford Div., Ford Motor Co.—**Charles E. Bosworth** is now assistant general purchasing agent.

Reo Motors, Inc.—**W. M. Taylor** was made manager of national and fleet accounts.



Borg-Warner Corp. —John Palomski has been appointed chief engineer of the Products Development Laboratory.



Walker Mfg. Co.— John L. Engels has been named vice-president and general sales manager.

White Motor Co.—**Max L. Strausser** has been named assistant to the vice-president in charge of sales, succeeding **Karl A. Roesch** now director of service.

Chevrolet Motor Div., General Motors Corp.—**W. R. Stacy** and **H. G. Moore** were made assistant national sales promotion managers.

Barber-Colman Co. — **Howard A. Nelson** has been named sales manager of the Small Tool Div., and **Charles A. Torson** has been appointed sales manager of the new Hendey Machine Div.



Brush Electronics Co. —Douglas C. Lynch has been named president.

Pesco Products Div., Borg-Warner Corp.—**J. M. Vinicombe, Jr.**, has been named director of industrial relations.

Pastushin Aviation Corp. — **Larry Kooi** has been appointed manager of material control.

Joseph T. Ryerson & Son, Inc.—**Charles H. Hallet** has become assistant manager of sales at the Chicago plant.

Curtiss-Wright Corp., Metals Processing Div. — **Stanley M. Marcinkowski** is now industrial relations manager.



Nash Motors Div., American Motors Corp. —Fred W. Adams has been appointed director of advertising and merchandising.



Long Mfg. Div., Borg-Warner Corp.— E. B. Holden has been made materials handling engineer, and J. W. McDonald is now director of industrial relations.

Solar Aircraft Co., Sales Div.—**Philip L. Ward** was named manager of the Turbine and Control Sales Dept.; **Eugene H. Ziebold**, manager of the Industrial Bellows Sales Dept.; **William L. Wilkinson**, field sales manager; and **Richard W. Bourne**, manager of a new Marketing Services Dept.

Barry Corp.—**Russell T. Lowe** was made assistant chief engineer.

(*Turn to page 494, please*)

Necrology

Robert B. Haynes, 56, retired vice-president in charge of manufacturing for Dana Corp., died Feb. 25, at Toledo, O.

Robert A. Suczek, 71, chief research engineer for Hudson Motors Div. of American Motors Corp., died Feb. 22, at Detroit, Mich.

Arthur F. Milbrath, 75, former vice-president and chief engineer of Wisconsin Motor Corp., died recently, at Milwaukee, Wis.

Robert S. Brown, 87, retired secretary of New Britain Machine Co., died Feb. 21, at New Britain, Conn.

James L. Rogers, 58, retired general manager of the Plastics and Resins Div. of American Cyanamid Corp., died Feb. 24, at New York, N. Y.

Ronald S. Drysdale, 72, special representative in charge of metalworking and cutting oils for Sun Oil Co., died Feb. 20, at Prospect Park, Pa.

7722 Different Cylinder SELECTIONS—

Miller

AIR AND HYDRAULIC

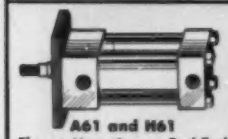
CYLINDERS AND BOOSTERS

"IN STOCK" for immediate delivery

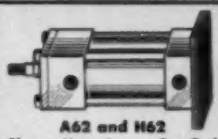
See Miller Bulletins A-105K (Air) and H-104K (Hydraulic) for Complete Dimensions and Engineering Data on these "in-stock" sizes and other Custom Miller Cylinders in bores up to 20" and strokes up to 22 feet.

"IN-STOCK" MODELS

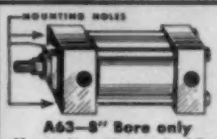
"A" Signifies Miller 200 psi Air Cylinders; "H", 2000 psi Hydraulic Cylinders. Interchangeable Mountings Are Shown In Rod On Drawings.



A61 and H61
Flange Mounting on Rod End



A62 and H62
Flange Mounting on Cap End



A63—8" Bore only
Flange Mounting on Rod End



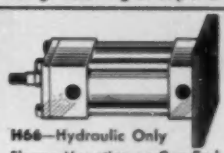
A64—8" Bore only
Flange Mounting on Cap End



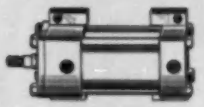
A50 & H50—Tie Rods not extended beyond nuts.
A51 & H51—Tie Rods extended both ends (shown).
A52 & H52—Tie Rods extended. Cap End only.
A53 & H53—Tie Rods Extended. Rod End only.
A54 & H54—Two Tie Rods extended at both ends.



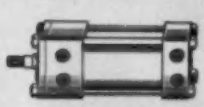
H65—Hydraulic Only
Flange Mounting on Rod End



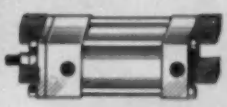
H66—Hydraulic Only
Flange Mounting on Cap End



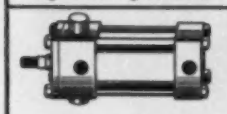
A72 and H72
Side Lug Mounting



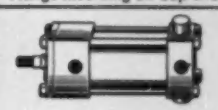
A74 and H74
Side Flush Mounting



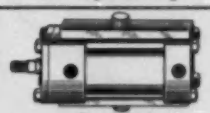
A77 and H77
Side or Foot Mounting



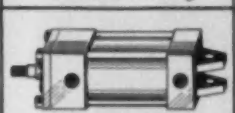
A81 and H81 Trunnion Mounting on Rod End



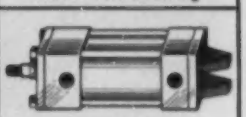
A82 and H82 Trunnion Mounting on Cap End



A83 and H83 Trunnion between Head and Cap (one week delivery)



A84 and H84
Pivot Mounting



A86 and H86
Pivot Mounting

IN STOCK BORES in Inches

	BORES	ROD DIA.	ROD TURN DOWN & THREADS	"IN-STOCK" STROKES (in Inches)
AIR	1½	⅝"	⅞-20	Cushioned
				Non-Cush. 1 2 3 4 5 6
	2	⅝"	⅞-20	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	2½	⅝"	⅞-20	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	3¼	1"	¾-16	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	4	1"	¾-16	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	5	1"	¾-16	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	6	1⅜"	1-14	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	8	1⅜"	1-14	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
HYDRAULIC	1½	⅝"	⅞-20	Cushioned
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12
	2	1"	¾-16	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	2½	1"	¾-16	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	3¼	1⅜"	1-14	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	4	1¾"	1¼-12	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	5	2"	1½-12	Cushioned 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush. 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36

① "A" and "H" Models 82, 84 and 86 with strokes over 18" require stop tubes.

Column strength requires larger diameter piston rods for the following:

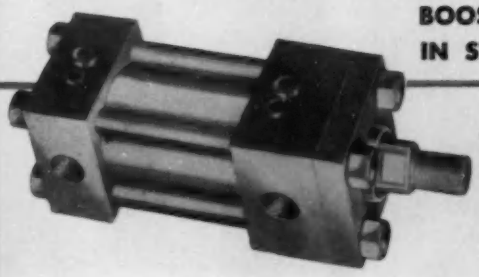
Air Cylinder Models A82, 84, and 86 with strokes inside area (1), when operated at 100 psi and over;

All hydraulic models with strokes inside area (2) and Models H82, 84, and 86 with strokes in area (4), when operated at 2000 psi and over;

④ Models H82, 84 and 86 with strokes inside area (3), when operated at 1000 psi and over.

③ ② Depending upon Trunnion Pin location, "A" and "H" Models 83 with standard diameter piston rods can have longer strokes than Models 82, 84 and 86.

See Miller File #251 for oversize piston rod and stop tube requirements.



BOOSTERS IN STOCK

Immediate Delivery on the following Miller 25 to 1 Ratio Boosters (80 psi air input produces 2000 psi hydraulic oil output): Model B4, 5" bore, 1" dia. ram, 6" and 12" strokes; Reciprocating Booster Model DA77-RBAB, 5" bore, 1" dia. ram, 6" stroke. Also Booster Tanks, 5" dia., 6" and 10" heights.

Write For Catalog and Stock Price List

Miller

MILLER FLUID POWER CO.
(Formerly MILLER MOTOR COMPANY)

2028 N. Hawthorne Ave., Melrose Park, Ill.

AIR & HYDRAULIC CYLINDERS • BOOSTERS • ACCUMULATORS
COUNTERBALANCE CYLINDERS

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UNBRAKO FORMULA FOR PLATED SCREW QUALITY. Make the screw precisely undersize with the finest machines. Plate it under rigidly controlled conditions in the best available plating equipment. Guarantee the finished product—Class 3A thread tolerance after plating. It is this unique formula that permits us to supply, with extremely good delivery, the plated UNBRAKO socket head cap screws for such precision applications as this high-speed centrifugal separator used in the processing of fish oils. The story of plating at SPS is told in "Precision Plating—a product and a service." See your authorized industrial distributor or write on your business letterhead for a copy of it. STANDARD PRESSED STEEL CO., Jenkintown 53, Pa.

UNBRAKO® SOCKET SCREW DIVISION **SPS** JENKINTOWN, PENNSYLVANIA

COUNTERBALANCE CYLINDERS

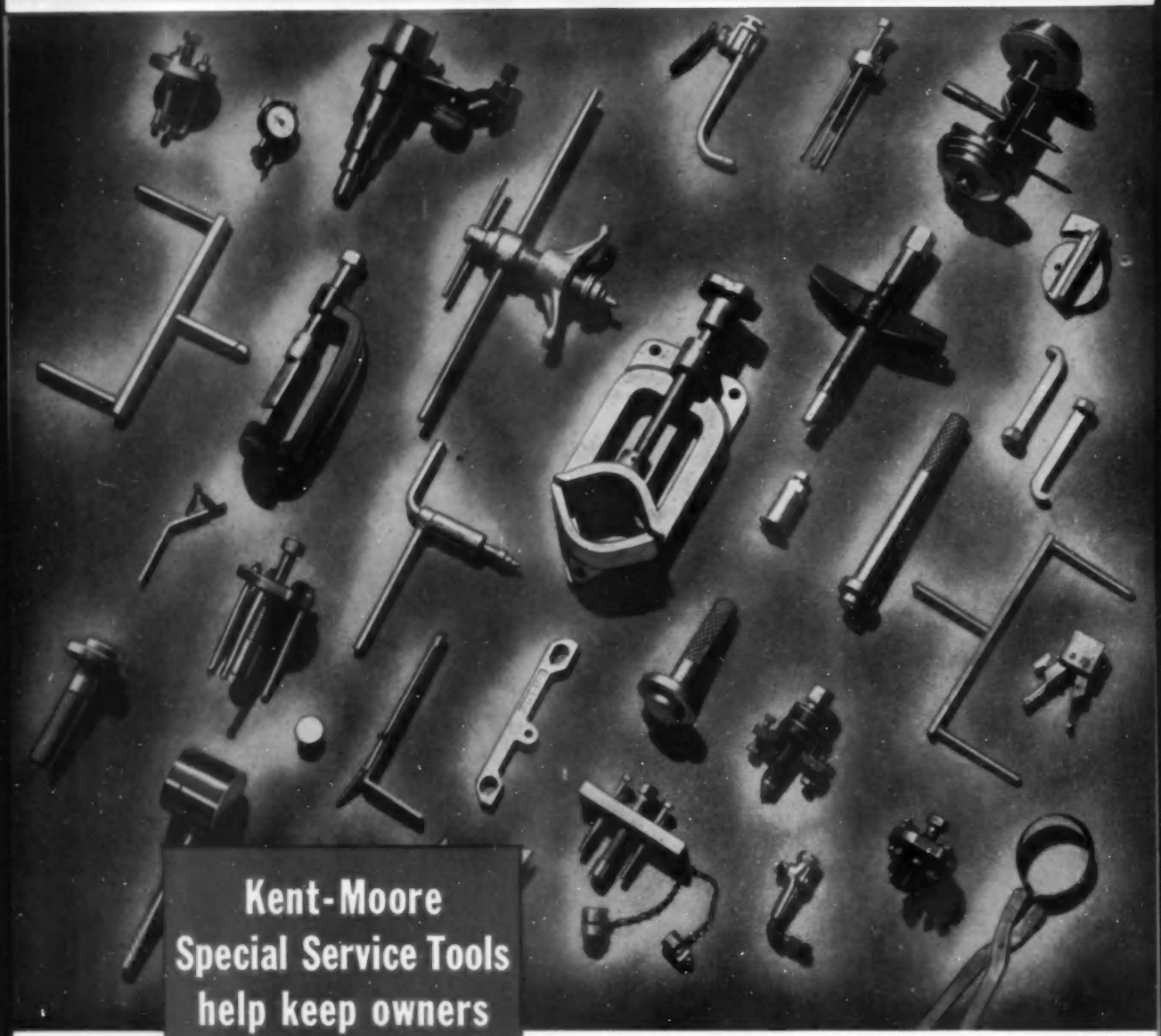


MOTOR VEHICLE SECTION

1

PRODUCTION—CARS AND TRUCKS • BUSES • TRAILERS TRACTORS • **NEW REGISTRATIONS**—CARS AND TRUCKS **DISTRIBUTION OUTLETS** • **TOTAL REGISTRATIONS**—CARS TRUCKS • BUSES • MOTOR CYCLES • TRAILERS • **EXPORTS AND IMPORTS** • **SPECIFICATIONS**—U. S. AND FOREIGN CARS TRUCKS AND BUSES • WHEEL TRACTORS • TRACK-LAYING TRACTORS • MILITARY CARGO VEHICLES •

AI
AUTOMOTIVE INDUSTRIES
37TH ANNUAL STATISTICAL ISSUE • 1955



Kent-Moore Special Service Tools help keep owners satisfied...with the cars they drive and the dealers they patronize...



Chances are you've never seen tools like these before. Unless, that is, you're actively engaged in reducing automotive service problems. Then of course you'll recognize them for what they are . . . Kent-Moore Special Service Tools, developed specifically to perform essential maintenance and repair operations for which no adequate standard tools exist. They save time, reduce costs, eliminate possible damage to parts. They help the automobile dealer handle his daily service problems quickly, easily, accurately . . . and thus they help him maintain a high standard of owner-customer satisfaction.

KENT-MOORE ORGANIZATION, INC.

ENGINEERS AND MANUFACTURERS OF SPECIAL AUTOMOTIVE SERVICE TOOLS AND EQUIPMENT

8-103 GENERAL MOTORS BUILDING • DETROIT 2, MICHIGAN



PRODUCTION

PASSENGER CARS • TRUCKS BUSES • TRACTORS • TRAILERS

★ ★ ★ ★

Factory Sales and Their Wholesale Value, U. S. Plants

As reported by the Automobile Manufacturers Association

Year	PASSENGER CARS Number of Units	PASSENGER CARS Wholesale Value†	PASSENGER CARS Average Wholesale Price	TRUCKS AND BUSES Number of Units	TRUCKS AND BUSES Wholesale Value†	TRUCKS AND BUSES Average Wholesale Price	TOTAL Number of Units	TOTAL Wholesale Value†
1900	4,192	$ 4,899,443	$1,169	.....	.....	....	4,192	$ 4,899,443
1901	7,000	8,183,000	1,169	.....	.....	....	7,000	8,183,000
1902	9,000	10,395,000	1,155	.....	.....	....	9,000	10,395,000
1903	11,235	13,000,000	1,157	.....	.....	....	11,235	13,000,000
1904	22,130	23,357,692	1,055	700	$ 1,272,747	$1,818	22,830	24,630,439
1905	24,250	38,670,000	1,594	750	1,330,000	1,773	25,000	40,000,000
1906	33,200	61,460,000	1,851	800	1,440,000	1,800	34,000	62,900,000
1907	43,000	91,630,000	2,131	1,000	1,780,000	1,780	44,000	93,400,000
1908	63,500	135,250,000	2,129	1,500	2,550,000	1,700	65,000	137,800,000
1909	122,990	159,765,721	1,288	2,297	5,333,683	1,618	127,287	165,099,404
1910	181,000	215,340,000	1,189	6,000	9,660,000	1,610	187,000	225,000,000
1911	199,319	225,000,000	1,128	10,681	21,000,000	1,966	210,000	246,000,000
1912	356,000	335,000,000	941	22,000	43,000,000	1,954	378,000	378,000,000
1913	461,500	399,902,000	866	23,500	44,000,000	1,872	485,000	443,902,000
1914	548,139	420,838,378	768	24,900	44,219,096	1,776	573,039	465,057,474
1915	895,930	575,978,000	643	74,000	125,800,000	1,700	969,930	701,778,000
1916	1,525,578	921,378,000	604	92,130	161,000,000	1,747	1,617,708	1,082,378,000
1917	1,745,792	1,053,505,781	603	128,157	220,982,668	1,724	1,873,949	1,274,488,449
1918	943,436	801,937,925	850	227,350	434,168,992	1,910	1,170,686	1,236,106,917
1919	1,651,625	1,365,395,415	827	224,731	371,422,820	1,653	1,876,356	1,736,818,235
1920	1,905,560	1,809,170,962	949	321,789	423,249,410	1,315	2,227,349	2,232,420,373
1921	1,468,067	1,038,191,037	707	148,052	166,070,810	1,122	1,616,119	1,204,261,847
1922	2,274,185	1,494,513,991	657	269,991	226,049,658	837	2,544,176	1,720,563,649
1923	3,624,717	2,196,272,116	606	409,295	308,537,929	754	4,034,012	2,504,810,045
1924	3,185,881	1,970,096,559	618	416,659	318,580,580	765	3,602,540	2,288,677,139
1925	3,735,171	2,458,370,026	658	530,659	458,400,277	864	4,265,830	2,916,770,303
1926	3,783,987	2,640,064,519	698	516,947	452,123,435	875	4,300,934	3,092,187,954
1927	2,936,533	2,164,670,891	737	464,793	420,130,624	904	3,401,326	2,584,801,515
1928	3,775,417	2,572,599,143	681	582,342	460,108,902	789	4,358,759	3,032,708,046
1929	4,455,178	2,790,614,309	626	881,909	622,533,897	706	5,337,087	3,413,148,206
1930	2,787,456	1,644,083,153	590	575,364	390,752,061	679	3,362,820	2,034,835,213
1931	1,945,164	1,108,246,698	567	432,262	265,444,618	614	2,380,426	1,373,691,316
1932	1,103,557	616,860,347	559	228,303	137,624,157	603	1,331,860	754,484,504
1933	1,560,599	773,424,963	496	329,218	175,380,963	533	1,889,817	948,805,926
1934	2,160,865	1,140,475,174	526	576,206	326,781,688	567	2,737,070	1,467,259,862
1935	3,273,874	1,707,836,325	522	697,367	380,997,320	546	3,971,241	2,088,833,655
1936	3,679,242	2,014,747,225	548	782,230	463,719,466	593	4,461,462	2,478,466,691
1937	3,929,203	2,340,912,630	570	591,016	537,314,633	602	4,520,219	2,778,227,253
1938	2,019,566	1,241,632,295	615	488,841	329,917,646	675	2,508,407	1,570,949,941
1939	2,888,512	1,770,231,597	613	700,377	489,786,701	699	3,588,889	2,260,018,298
1940	3,717,385	2,376,654,063	639	754,901	567,820,414	752	4,472,286	2,938,474,497
1941	3,779,682	2,567,306,996	679	1,060,820	1,069,799,855	1,008	4,840,502	3,637,006,851
1942	222,862	163,813,559	735	818,662	1,427,456,801	1,744	1,041,524	1,591,270,360
1943	139	101,799	....	699,689	1,451,794,475	2,076	699,828	1,451,896,274
1944	610	446,704	....	737,524	1,700,928,939	2,306	738,134	1,701,375,643
1945	69,532	57,254,655	823	655,683	1,181,965,532	1,803	725,215	1,239,216,187
1946	2,148,699	1,979,781,084	921	940,866	1,042,247,276	1,109	3,089,565	3,022,028,360
1947	3,558,178	3,936,017,000	1,106	1,239,448	1,731,713,000	1,397	4,797,621	5,667,730,000
1948	3,909,270	4,876,422,000	1,246	1,376,274	1,830,475,000	1,366	5,285,544	6,750,898,000
1949	5,119,466	6,650,857,000	1,299	1,134,185	1,394,035,000	1,229	6,253,651	8,044,892,000
1950	6,665,863	8,468,137,000	1,270	1,337,193	1,707,748,000	1,277	8,003,056	10,175,885,000
1951	5,338,435	7,341,275,000	1,356	1,426,822	2,223,859,000	1,629	6,765,263	9,565,134,000
1952	4,320,794	6,455,114,000	1,494	1,218,165	2,319,789,000	1,904	5,538,959	8,774,903,000
1953	6,116,948	9,002,580,000	1,472	1,206,266	2,089,060,000	1,732	7,323,214	11,091,640,000
1954	5,558,897	*8,280,000,000	1,490	1,042,084	*1,600,000,000	1,535	6,600,981	*9,880,000,000

* Partly estimated. † Beginning with year 1937, standard equipment is included in the values reported.

Note: Passenger car and truck totals, units and value have been revised for years 1925 to 1939 inclusive, in order to make the classifications of all vehicles comparable with post-War II years 1946 to date. In addition, some other adjustments have been made making for greater accuracy and comparability in units and value from 1925 to date.

A substantial part of trucks and buses reported comprises chassis only, without bodies; hence the value of bodies for these chassis is not included.

Federal excise taxes are excluded in all years. Table above includes sales of military vehicles.

Monthly Motor Vehicle Factory Sales

From Plants Located in the United States
As reported by the Automobile Manufacturers Association

PASSENGER CARS

	1954	1953	1952	1951	1950	1949
Jan.	454,562	452,617	273,122	478,589	467,824	326,559
Feb.	446,676	485,270	333,224	595,865	385,361	324,501
Mar.	531,529	566,074	372,440	617,399	469,618	402,388
Apr.	554,667	595,776	415,357	593,638	455,193	437,958
May	497,062	548,322	397,486	511,938	573,518	395,765
June	507,955	585,678	407,962	482,029	726,688	493,870
July	451,683	596,961	168,327	381,467	595,967	483,581
Aug.	445,306	512,730	218,577	426,932	682,782	557,624
Sept.	360,998	476,292	438,397	366,068	616,827	534,861
Oct.	321,195	528,814	471,808	415,255	651,169	488,176
Nov.	498,248	378,906	405,111	356,590	564,445	381,874
Dec.	669,936	389,628	418,983	293,325	521,371	292,009
Total	5,558,897	6,116,948	4,320,794	5,328,435	6,665,863	5,119,466

TRUCKS AND BUSES

	1954	1953	1952	1951	1950	1949
Jan.	96,572	111,853	102,288	128,244	93,542	105,603
Feb.	87,469	96,930	101,992	112,463	90,106	102,996
Mar.	101,474	134,365	116,533	137,626	111,042	116,281
Apr.	97,102	126,899	114,228	136,231	104,120	107,926
May	91,500	93,810	106,431	146,789	121,378	87,698
June	91,821	74,453	110,748	135,656	135,926	99,436
July	78,752	105,998	43,455	116,909	111,655	95,849
Aug.	76,144	101,925	52,405	122,775	135,341	100,806
Sept.	68,944	98,399	112,762	109,934	106,816	91,896
Oct.	66,535	92,474	132,453	111,193	109,399	85,559
Nov.	89,537	74,081	114,425	93,678	99,124	73,820
Dec.	96,235	95,079	116,445	87,380	119,564	67,011
Total	1,042,984	1,266,266	1,218,165	1,426,828	1,337,193	1,134,185

TOTAL CARS, TRUCKS AND BUSES

	1954	1953	1952	1951	1950	1949
Jan.	551,134	564,470	375,410	606,833	561,366	432,162
Feb.	534,145	582,200	435,216	618,328	475,467	427,597
Mar.	633,003	700,439	488,973	755,025	580,660	519,669
Apr.	651,769	722,675	529,585	639,269	559,313	544,884
May	588,562	642,132	503,917	652,727	696,896	483,463
June	599,776	660,131	518,710	617,685	856,614	593,306
July	530,416	702,899	211,782	492,376	706,702	579,424
Aug.	521,450	614,655	270,982	549,707	818,123	658,430
Sept.	429,942	574,631	551,159	476,002	722,843	626,757
Oct.	387,730	621,288	604,261	526,448	760,568	573,735
Nov.	587,785	452,987	519,536	450,268	663,569	455,694
Dec.	766,912	484,707	535,428	380,655	640,935	359,020
Total	6,600,981	7,323,214	5,528,959	6,765,263	8,063,956	6,253,651

Factory Sales to Domestic and Foreign Markets

Automobile Manufacturers Association

PASSENGER CARS

Year	Total	Domestic Market	Foreign Market	Per Cent Foreign
1943	139	121	18	12.9
1944	610	308	302	49.5
1945	69,532	68,093	1,439	2.1
1946	2,148,699	2,004,649	144,050	6.7
1947	3,558,178	3,297,331	260,847	7.3
1948	3,909,270	3,676,093	233,177	6.0
1949	5,119,466	4,963,325	156,141	3.0
1950	6,665,863	6,512,938	152,925	2.3
1951	5,328,435	5,091,470	246,965	4.6
1953	4,320,794	4,153,746	167,048	3.9
1953	6,116,948	5,930,686	186,262	3.0
1954	5,558,897	5,352,353	206,544	3.7

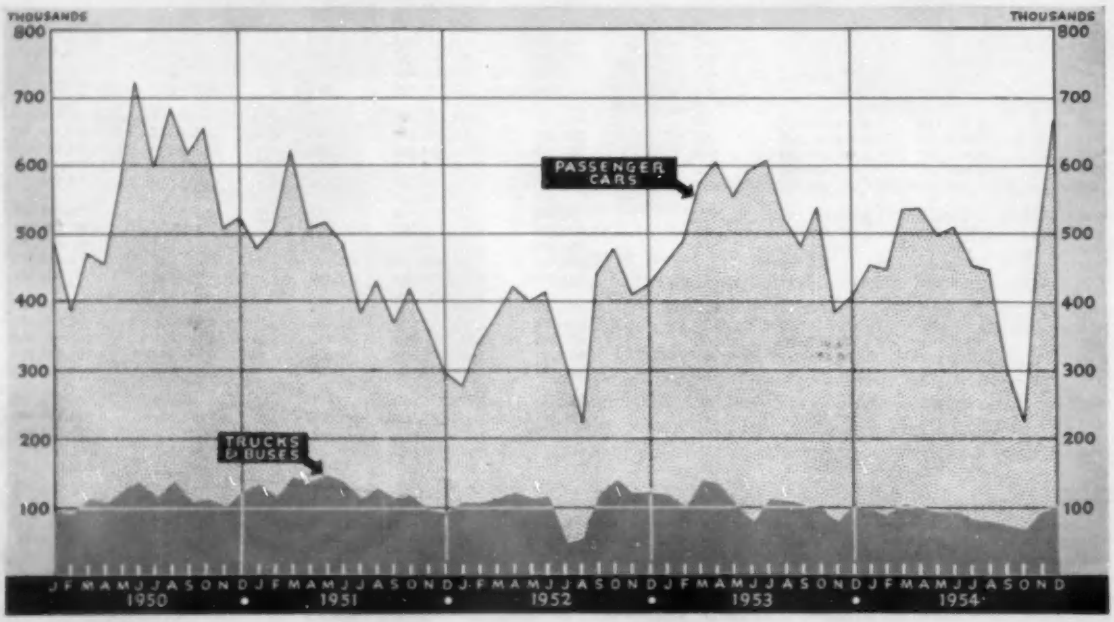
TRUCKS AND BUSES

Year	Total	Domestic Market	Foreign Market	Per Cent Foreign
1943	24,942	23,420	1,422	5.7
1944	116,167	102,295	13,872	11.9
1945	291,469	254,039	37,430	12.8
1946	940,866	753,845	187,021	19.9
1947	1,239,443	987,954	251,489	20.3
1948	1,376,274	1,173,234	203,040	14.7
1949	1,134,185	1,002,551	131,634	11.6
1950	1,337,193	1,186,434	150,759	11.3
1951	1,426,828	1,203,244	223,584	15.7
1952	1,218,165	1,055,627	162,538	13.3
1953	1,262,266	1,067,325	138,941	11.6
1954	1,042,084	847,152	194,932	18.7

TOTAL MOTOR VEHICLES

Year	Total	Domestic Market	Foreign Market	Per Cent Foreign
1943	24,981	23,541	1,440	5.8
1944	116,777	102,603	14,174	12.1
1945	361,101	322,132	38,869	10.7
1946	3,089,565	2,758,494	331,071	10.7
1947	4,797,621	4,285,285	512,336	10.7
1948	5,285,544	4,849,327	436,217	8.3
1949	6,253,651	5,965,876	287,775	4.6
1950	8,003,056	7,699,372	303,684	3.8
1951	6,765,263	6,294,714	470,549	6.9
1952	5,538,959	5,209,373	329,586	6.0
1953	7,323,214	6,998,011	325,203	4.4
1954	6,600,981	6,199,505	401,476	8.1

MOTOR VEHICLE FACTORY SALES, BY MONTHS, 1950-1954



Passenger Car Factory Sales by Body Types

Automobile Manufacturers Association

Body Type	1954 Units	1954 % of Total	1953 Units	1953 % of Total	1952 Units	1952 % of Total	1951 Units	1951 % of Total
4-Door Sedans	2,592,841	46.64	3,078,616	50.34	2,259,166	52.39	2,664,449	50.28
2-Door Sedans, Couches, Coupes†	1,480,395	26.63	1,694,638	27.70	1,214,904	28.12	1,772,729	33.22
Business Coupes	16,510	.30	36,974	.60	29,000	.67	53,876	1.01
"Hard Top" (Coupes and Sedans)	951,113	17.11	841,982	13.76	539,508	12.49	487,261	9.13
Convertibles, Except "Hard Top"	155,667	2.80	158,962	2.60	100,116	2.32	143,388	2.69
Station Wagons‡	349,449	6.29	297,393	4.86	169,036	3.90	178,699	3.35
Chassis	12,922	.23	8,383	.14	9,064	.21	17,044	.32
Total	5,558,897	100.00	6,116,948	100.00	4,320,794	100.00	5,338,435	100.00

† Does not include Business Coupes. ‡ Includes only station wagons produced on passenger car chassis. • Includes taxicabs.

1954-1953 Passenger Car Production—by Makes, by Months

As reported to Automotive Industries by the car factories

1954

Make	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Hudson	2,078	1,302	2,985	1,802	2,469	2,678	2,866	3,858	3,517	3,470	None	None	28,026
Nash	8,570	6,320	5,604	5,911	4,561	4,964	5,004	3,144	5,940	5,780	5,517	2,016	63,331
Total—American Motors	10,648	7,622	8,589	7,714	7,030	8,642	7,870	7,002	9,457	9,250	5,517	2,016	91,357
Chrysler	10,619	10,622	9,911	9,845	8,185	7,648	5,549	4,391	None	4,998	12,284	17,684	101,739
De Soto	8,323	6,445	6,054	6,650	5,387	4,741	4,590	3,693	None	2,926	9,197	11,528	69,544
Dodge	10,895	8,981	11,308	13,603	11,368	11,885	6,999	10,805	113	8,265	24,877	32,755	151,764
Plymouth	36,154	24,380	30,039	39,423	33,697	43,705	32,600	11,571	1,861	14,868	49,704	72,397	390,399
Total—Chrysler Motors	65,991	50,428	66,312	69,524	58,637	67,979	49,738	30,460	1,974	21,057	96,062	135,164	722,246
Ford	113,678	115,995	134,948	128,190	125,698	126,541	115,549	120,374	114,143	30,419	115,660	148,562	1,394,758
Lincoln	4,581	3,759	4,597	3,313	2,966	2,879	2,277	2,979	2,345	1,227	2,287	2,516	35,726
Mercury	30,772	25,831	29,069	22,296	22,336	22,831	18,533	17,588	21,848	9,906	10,118	25,602	256,730
Total—Ford Motors	154,031	145,585	168,614	153,799	151,000	152,251	136,359	140,941	138,336	41,552	128,065	176,681	1,687,214
Buick	38,083	42,802	50,890	54,836	51,183	49,248	43,120	44,276	41,615	14,637	46,485	54,288	531,463
Cadillac	6,019	9,510	12,238	12,444	11,250	12,280	10,651	11,048	10,674	3,370	11,608	14,654	123,746
Chevrolet	117,025	110,593	121,151	140,588	130,957	130,456	122,120	133,156	37,690	72,433	131,615	156,573	1,414,357
Oldsmobile	19,795	32,132	38,950	45,840	43,645	44,169	38,162	36,101	24,907	20,968	36,657	43,052	423,510
Pontiac	32,834	30,740	35,526	35,091	31,925	28,489	26,022	29,090	4,238	31,780	36,635	48,517	370,887
Total—General Motors	211,756	225,778	268,785	288,799	268,360	264,642	240,076	253,671	129,124	143,188	263,000	317,084	2,874,263
Packard	3,699	3,998	3,916	3,372	1,557	3,012	1,747	2,628	1,322	None	232	2,110	27,593
Studebaker	10,624	7,475	7,060	6,554	4,691	6,178	5,343	1,759	5,115	11,212	13,297	5,944	85,252
Total—S-P Corp.	14,323	11,473	10,976	9,926	6,248	9,190	7,090	4,387	6,437	11,212	13,529	8,054	112,845
Kaiser	26	932	929	1,163	1,425	950	30	None	None	None	None	None	5,455
Willys	43	1,439	1,725	2,239	1,551	1,362	438	180	380	243	521	902	11,023
Total—Willys Motors	69	2,371	2,654	3,402	2,976	2,312	468	180	380	243	521	902	16,478
Total—All Makes	456,728	443,257	525,930	533,164	494,251	505,016	441,601	436,641	285,708	236,512	506,694	639,901	5,505,403

1953

Make	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Hudson	6,581	8,499	10,242	11,540	7,848	6,190	3,515	3,834	5,944	4,150	5,259	3,490	77,093
Nash	16,301	18,630	19,050	21,258	17,017	14,054	1,146	58	4,717	7,699	8,633	6,831	135,394
Total—American Motors	22,882	27,129	29,293	32,798	24,865	20,244	4,661	3,892	10,661	11,849	13,892	10,321	212,487
Chrysler	16,684	16,624	17,029	16,748	15,136	19,043	13,533	6,304	4,354	12,355	11,420	11,177	160,407
De Soto	9,792	10,761	12,506	13,541	12,469	13,904	12,107	8,697	5,635	7,715	11,187	10,648	129,962
Dodge	31,263	30,325	28,534	30,832	27,784	32,505	21,458	13,976	16,313	25,918	20,280	13,528	293,716
Plymouth	49,844	52,614	58,278	57,280	56,367	66,750	69,797	46,332	40,268	67,640	48,205	49,140	662,515
Total—Chrysler Motors	107,583	110,324	117,347	118,401	111,756	132,202	116,895	75,309	66,570	113,628	91,092	84,493	1,246,600
Ford	79,040	76,195	91,699	96,319	69,992	91,452	124,899	123,655	124,120	132,115	110,961	61,721	1,184,187
Lincoln	3,883	801	4,971	6,201	6,542	5,553	4,407	2,511	287	39	2,405	4,362	41,963
Mercury	20,562	18,623	23,639	23,234	17,318	21,963	35,966	35,369	26,432	37,077	19,431	30,875	320,369
Total—Ford Motors	103,434	95,619	120,309	125,754	93,852	118,968	165,272	161,475	162,839	169,231	132,797	96,958	1,546,518
Buick	38,191	29,757	46,099	51,158	49,182	52,726	45,678	48,556	46,846	41,792	17,605	13,921	485,263
Cadillac	9,311	9,939	11,062	11,021	10,510	11,908	11,000	4,812	3,944	7,095	10,050	3,746	105,538
Chevrolet	101,326	114,574	136,637	139,577	139,474	144,663	139,459	136,566	128,787	132,955	37,219	128,051	1,477,293
Oldsmobile	27,292	27,945	32,228	35,467	36,550	38,202	36,628	24,396	12,289	14,408	24,961	9,966	319,426
Pontiac	30,679	31,367	38,237	42,529	42,789	44,829	42,199	31,868	26,427	31,343	18,466	33,265	414,011
Total—General Motors	206,809	222,682	262,263	279,702	278,505	291,440	274,964	245,992	212,333	227,593	108,301	188,953	2,799,626
Packard	16,884	10,954	9,937	10,105	9,783	9,201	7,173	4,457	3,228	446	752	5,321	81,341
Studebaker	5,437	10,923	19,633	24,465	22,329	14,328	21,958	22,159	13,636	7,997	13,812	9,979	186,484
Total S.-P. Corp.	16,321	20,977	29,570	34,570	32,112	23,529	29,131	26,616	16,864	8,443	14,564	15,118	267,825
Henry J*	1,086	1,426	1,612	1,245	442	84	56	90	78	216	1,071	24	7,661
Kaiser	1,953	2,631	3,040	2,313	2,662	1,127	156	6	167	76	79	84	14,225
Willys	5,825	4,401	5,708	6,313	2,070	None	5,664	4,082	3,286	2,288	None	43	39,650
Total—Willys Motors	8,864	8,458	10,360	9,871	5,115	1,211	5,906	4,178	3,531	2,580	1,141	151	61,366
Total—All Makes	465,893	485,189	569,142	601,186	546,205	588,604	596,829	517,462	472,798	533,324	361,787	396,903	6,134,422

*—Includes "Allstate" production.

1954 Motor Truck Factory Sales by Gross Vehicle Weights

From data supplied by the Automobile Manufacturers Association

TOTAL SALES FROM U. S. PLANTS

G.V.W.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
5,000 lb. and less	45,560	39,373	45,588	42,187	41,950	42,786	37,470	35,395	31,752	29,789	42,828	46,838	482,516
5,001-10,000 lb.	17,492	16,210	18,841	16,022	16,895	15,936	13,558	12,744	12,919	11,878	15,421	16,832	186,739
10,001-14,000 lb.	3,608	3,207	3,719	3,755	3,329	3,464	3,289	2,735	2,576	2,158	3,648	3,585	39,073
14,001-16,000 lb.	17,735	15,656	19,446	18,996	16,958	16,021	15,714	15,292	11,984	12,465	15,386	16,968	196,121
16,001-19,500 lb.	3,658	3,915	4,358	4,017	3,812	4,284	3,103	3,986	3,549	4,255	4,921	4,716	48,574
19,501-26,000 lb.	4,776	5,449	5,322	5,074	4,612	3,726	2,430	2,381	2,589	2,422	3,270	3,048	45,099
Over 26,000 lb.	3,348	3,331	3,903	3,671	3,670	3,253	2,943	3,302	3,249	3,161	3,258	3,835	40,924
Total	96,167	87,141	101,177	96,723	91,226	91,470	78,507	75,835	68,618	66,138	89,232	95,812	1,038,046

FACTORY SALES FOR DOMESTIC MARKET

G.V.W.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
5,000 lb. and less	41,010	34,000	39,232	35,845	33,863	35,744	31,063	29,913	24,216	23,509	36,787	40,835	406,017
5,001-10,000 lb.	15,131	13,585	16,433	15,236	14,298	13,283	10,844	10,265	9,707	8,782	12,484	13,883	153,931
10,001-14,000 lb.	3,323	2,817	3,343	3,288	2,808	2,852	2,675	2,209	2,087	1,764	2,943	2,902	33,011
14,001-16,000 lb.	14,126	11,805	14,774	14,390	12,845	13,278	10,868	10,129	7,750	7,469	11,619	12,497	141,550
16,001-19,500 lb.	2,880	2,716	3,143	2,832	2,742	2,892	2,061	2,810	2,053	2,626	3,287	3,497	33,520
19,501-26,000 lb.	4,096	4,613	4,638	4,545	3,973	3,277	1,955	1,887	2,099	1,938	2,334	2,639	35,454
Over 26,000 lb.	2,087	2,932	3,591	3,302	3,183	2,924	2,695	3,050	2,953	2,878	2,903	3,465	36,963
Total	82,563	72,468	95,154	79,439	73,712	74,250	62,161	60,263	50,485	48,966	72,862	79,768	843,451

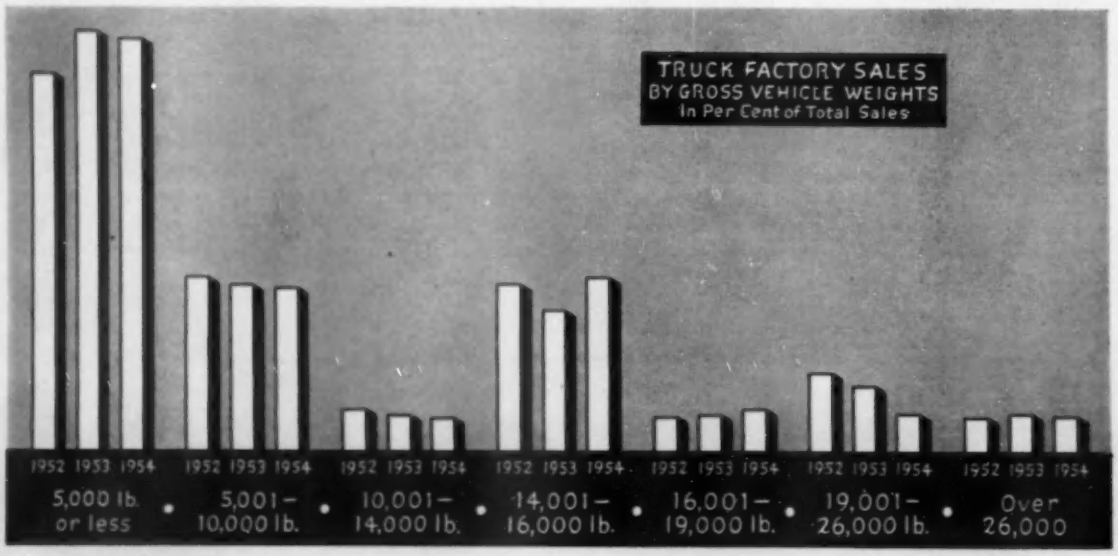
FACTORY SALES FOR EXPORT

G.V.W.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
5,000 lb. and less	4,550	5,373	6,356	7,342	8,087	7,042	6,407	5,482	7,536	6,280	6,041	6,003	76,499
5,001-10,000 lb.	2,361	2,625	2,408	2,787	2,597	2,653	2,714	2,479	3,212	3,096	2,937	2,939	32,808
10,001-14,000 lb.	285	390	376	467	521	612	614	526	489	394	705	683	6,062
14,001-16,000 lb.	3,609	3,851	4,672	4,606	4,113	4,743	4,846	5,163	4,234	4,996	4,267	4,471	53,571
16,001-19,500 lb.	778	1,199	1,215	1,184	1,070	1,392	1,042	1,176	1,516	1,629	1,634	1,219	15,054
19,501-26,000 lb.	760	836	684	529	639	449	475	494	490	494	436	359	6,645
Over 26,000 lb.	261	399	312	369	487	329	248	252	296	283	350	376	3,956
Total	12,604	14,673	16,023	17,284	17,514	17,220	16,346	15,572	17,773	17,172	16,370	16,044	194,595

Annual Motor Truck Factory Sales by G.V.W., 1946-1954

From data supplied by the Automobile Manufacturers Association

Year	5,000 lb. & Less Units	% of Total	5,001-10,000 lb. Units	% of Total	10,001-14,000 lb. Units	% of Total	14,001-16,000 lb. Units	% of Total	16,001-19,500 lb. Units	% of Total	19,501-26,000 lb. Units	% of Total	Over 26,000 lb. Units	% of Total	Total Units	% of Total
1954	482,516	46.5	186,739	18.0	39,073	3.8	196,121	18.8	48,574	4.7	45,099	4.3	40,924	3.9	1,038,046	100
1953	563,112	46.8	221,817	18.5	46,624	3.9	185,115	15.4	49,628	4.1	86,773	7.2	49,140	4.1	1,202,209	100
1952	606,316	41.7	234,568	19.3	56,308	4.6	219,284	18.1	45,617	3.8	105,451	8.7	45,246	3.8	1,312,790	100
1951	587,649	41.5	260,360	18.4	99,140	7.0	278,103	19.5	68,899	4.9	81,066	5.7	42,151	3.0	1,417,368	100
1950	627,405	47.1	266,043	20.0	89,156	6.7	219,918	16.5	53,434	4.0	47,029	3.5	29,350	2.2	1,332,335	100
1949	513,148	45.5	279,359	24.8	94,605	13.4	173,137	15.3	37,223	3.3	23,801	2.1	17,391	1.5	1,128,474	100
1948	485,088	35.6	267,720	19.6	182,500	13.4	280,535	20.6	76,711	5.6	50,021	3.7	21,400	1.5	1,363,975	100
1947	375,320	30.8	182,461	14.9	259,808	21.8	291,601	23.1	41,615	3.4	42,744	3.5	26,778	2.2	1,220,333	100
1946	330,723	25.5	85,068	9.5	267,167	26.6	190,885	21.6	24,087	2.6	25,527	2.7	14,008	1.5	938,775	100



BUSES • TRAILERS

Revenue Motor Bus Factory Sales

From Plants Located in the United States

As reported by the Automobile Manufacturers Association

	1954	1953	1952	1951	1950	1949	1948	1947	1946	1944	1943
January	405	254	778	661	219	658	1,382	1,273	447	231	227
February	328	190	625	521	133	418	1,101	1,303	285	245	226
March	297	236	569	829	199	545	1,430	1,421	527	236	102
April	379	145	597	819	268	514	1,056	1,650	948	352	76
May	274	367	423	742	412	564	1,288	1,853	789	367	33
June	351	380	484	838	598	632	1,068	1,628	774	293	54
July	246	376	224	665	397	439	1,012	1,806	862	361	19
August	309	447	349	782	467	444	771	1,765	1,067	470	48
September	326	348	387	743	473	296	1,143	1,607	833	563	145
October	397	319	389	1,174	555	322	679	1,667	975	594	162
November	305	371	319	833	584	308	545	1,416	1,146	454	199
December	422	424	231	845	665	369	824	1,721	1,438	1,483	336
Total	4,039	4,057	5,375	9,453	4,908	5,511	12,299	19,110	10,091	5,789	1,613

Motor Bus Factory Sales—by Type of Bus

Does Not Include Non-Integral School Buses

As reported by the Automobile Manufacturers Association

	Domestic Market					
Year	City Type	Intercity Type	Special Type†	Total Domestic Market	Total Foreign Market	Total Factory Sales
1954	2,307	824	561	3,702	337	4,039
1953	2,290	856	586	3,731	326	4,057
1952	1,907	691	1,823	4,511	864	5,375
1951	4,754	1,233	2,797	8,784	676	9,460
1950	2,748	581	683	4,012	896	4,908
1949	3,402	690	802	4,894	617	5,511
1948	6,971	2,558	997	10,526	1,773	12,299
1947	11,779	3,451	1,400	16,650	2,460	19,110

†—Includes integral school buses.

Truck Trailer Shipments by Type

As reported by Industry Division, Bureau of the Census

Type of Trailer	1954	1953	1952	1951
Vans				
Insulated and refrigerated	4,250	4,077	3,382	3,895
Steel	831	890	895	....
Aluminum	3,419	3,187	2,487	....
Furniture	1,141	1,468	1,437	*
Steel	} 1,141	1,468	1,437	....
Aluminum				....
All other closed top	18,118	22,236	17,199	23,871
Steel	6,639	11,663	9,016	....
Aluminum	11,479	10,573	8,183	....
Open top	2,250	3,869	2,656	3,104
Steel	1,164	1,760	1,252	....
Aluminum	1,116	2,109	1,404	....
Total Vans	25,780	31,650	24,674	30,870
Tanks				
Petroleum	5,417	3,879	4,336	5,065
Food	....	....	294	....
L.P.G.	....	....	132	....
All other	658†	830†	338	617
Total Tanks	6,075	4,709	5,100	5,682
Pole, pipe and logging				
Single axle	599	593	982	1,215
Tandem axle	797	997	1,485	1,734
Total	1,396	1,590	2,467	2,949
Platforms				
Racks, livestock & stake	888	4,104	4,151	1,951
Grain bodies	785	905	1,182	926
Flats (all types)	5,333	9,111	7,729	10,328
Total Platforms	7,006	14,120	13,062	13,205
Low-bed heavy haulers	2,090	5,415	5,529	4,028
Dump trailers	996	1,018	947	1,156
All other trailers**	7,955	24,891	2,809	2,536
Total Complete Trailers	52,307	93,393	54,588	61,426
Trailer chassis	2,294	2,306	2,385	3,265
Total Trailer and Chassis	54,601	96,699	57,973	64,691

* Included with All Other Closed-top vans. ** Includes off-highway, auto transport, public utility trailers, and converter dollies. † Includes food and L.P.G. trailers.

Truck Trailer Shipments by Months

In Units and Their Value

As reported by Industry Division, Bureau of the Census

1954	Shipments	Value
January	4,677	$ 17,126,000
February	4,224	17,170,000
March	4,859	19,711,000
April	4,470	18,839,000
May	4,539	18,587,000
June	5,094	21,724,000
July	4,178	21,126,000
August	4,076	20,277,000
September	4,146	20,240,000
October	4,626	23,550,000
November	4,941	24,218,000
December	4,771	22,601,000
Total	54,601	$245,513,000
1953		
January	5,630	$ 22,943,000
February	5,928	23,889,000
March	6,768	26,657,000
April	7,794	29,292,000
May	9,325	29,695,000
June	9,506	26,531,000
July	10,164	24,636,000
August	9,659	25,121,000
September	9,732	24,000,000
October	8,537	22,129,000
November	7,391	20,265,000
December	6,215	19,352,000
Total	96,699	$294,849,000
1952		
January	4,941	$ 19,411,000
February	4,633	18,637,000
March	5,259	20,676,000
April	5,308	20,126,000
May	5,166	19,758,000
June	4,027	16,445,000
July	3,934	16,656,000
August	4,421	16,293,000
September	4,916	19,503,000
October	5,414	21,398,000
November	4,908	19,155,000
December	5,046	20,620,000
Total	57,973	$238,278,000

TRACTORS

Farm and Non-Farm Tractor Shipments, 1947-1954

In Units and Their Wholesale Value

As reported by the Industry Division, Bureau of the Census

Year	TOTAL SHIPMENTS Number	TOTAL SHIPMENTS Value (Add 000)	TOTAL SHIPMENTS Average Value per Tractor	FOR DOMESTIC USE Number	FOR DOMESTIC USE Value (Add 000)	FOR DOMESTIC USE Average Value per Tractor	FOR EXPORT Number	FOR EXPORT Value (Add 000)	FOR EXPORT Average Value per Tractor
TOTAL—ALL TYPES									
1953	652,761	$ 948,287	.....	573,213	$729,925	.....	79,548	$218,362	.....
1952	667,824	924,615	.....	591,502	743,543	.....	76,322	181,072	.....
1951	777,467	1,042,719	.....	670,651	841,113	.....	106,816	201,606	.....
1950	698,344	820,931	.....	604,686	649,972	.....	93,658	170,959	.....
1949	720,644	782,881	.....	599,621	603,874	.....	121,023	189,007	.....
1948	738,686	689,357	.....	625,413	549,290	.....	113,273	140,067	.....
1947	638,451	516,815	.....	539,312	410,026	.....	99,139	106,789	.....
WHEEL TYPE									
1954*	199,816	$ 345,250	$1,715	162,589	$275,859	$1,697	37,227	$ 67,391	$1,810
1953	390,366	590,322	1,512	336,401	494,981	1,471	53,965	95,341	1,767
1952	417,177	615,676	1,476	360,366	516,847	1,434	56,811	98,829	1,740
1951	559,973	758,901	1,354	472,821	631,027	1,335	87,152	126,974	1,457
1950	499,917	574,295	1,149	425,815	478,238	1,123	74,102	96,057	1,296
1949	545,368	572,430	1,050	445,030	454,565	1,021	100,338	117,865	1,175
1948	529,692	497,298	939	436,984	399,822	915	92,708	97,476	1,051
1947	428,565	349,334	815	352,443	280,867	797	76,222	68,467	898
TRACKLAYING TYPE									
1954*	30,165	$ 197,979	$6,563	17,910	$118,275	$6,604	12,255	$ 79,704	$6,504
1953	50,597	328,696	6,496	31,692	206,698	6,522	18,905	121,998	6,453
1952	48,155	286,841	5,832	33,596	199,352	5,935	14,559	87,489	5,597
1951	49,142	259,960	5,290	33,507	186,017	5,551	15,635	73,943	4,729
1950	44,660	223,487	5,011	29,167	150,205	5,150	15,433	73,282	4,748
1949	43,849	199,423	4,548	28,260	129,234	4,573	15,589	70,189	4,502
1948	39,573	162,007	4,094	29,544	121,382	4,106	10,029	40,625	4,050
1947	37,534	134,330	3,579	27,885	99,164	3,556	9,649	35,166	3,644
GARDEN TYPE									
1953	211,798	$ 26,269	$ 124	205,120	$ 28,246	$ 138	6,678	$ 1,023	$ 153
1952	202,492	28,098	139	197,540	27,344	138	4,952	754	152
1951	168,352	24,758	147	164,323	24,069	146	4,029	689	171
1950	153,827	22,249	145	149,704	21,529	144	4,123	720	175
1949	131,427	21,028	160	126,331	20,073	159	5,096	955	187
1948	169,241	30,052	177	154,845	28,686	177	10,550	1,966	186
1947	172,352	33,151	192	158,984	29,995	189	13,368	3,156	236

*—Data for nine months only.

Tractor Shipments by Type and Hp Ratings

In Units and Their Wholesale Value

As reported by the Industry Division, Bureau of the Census

Type and Hp.	1954* Number of Units	1954* Value (Add 000)	1953 No. of Mfrs.	1953 Number of Units	1953 Value (Add 000)	1952 No. of Mfrs.	1952 Number of Units	1952 Value (Add 000)
Wheel Type								
All Purpose								
9-24 belt hp	25,321	$ 25,009	8	85,777	$ 82,946	13	194,434	$194,527
25-29 belt hp	2,893	3,794	9	17,017	23,375	9	51,111	63,325
30-34 belt hp	69,347	84,247	11	129,061	152,376	8	58,547	92,937
35-39 belt hp	4,207	6,358	10	25,410	40,870	..	.....	.....
40-44 belt hp	14,631	21,027	6	19,202	32,989	11	54,244	95,883
45 belt hp and over	57,098	108,593	11	69,540	128,504	..	.....	.....
Total—All Purposes	**173,497**	**$253,028**	**20**	**346,147**	**$459,059**	**21**	**358,336**	**$446,672**
Other than All Purpose								
17-24 belt hp	1,382	$ 1,303	7	2,006	$ 1,956	8	7,144	$ 7,526
25-34 belt hp	2,071	3,879	12	5,376	7,738	10	10,569	16,766
35-44 belt hp	3,883	6,594	17	7,202	11,169	8	23,285	45,357
45-49 belt hp	3,195	6,506	4	8,292	14,870	..	.....	.....
50-54 belt hp	4,614	10,899	7	11,852	29,019	10	13,817	39,508
55 belt hp and over	8,759	27,567	4	6,547	22,830	..	.....	.....
Total—Other	**23,905**	**$ 56,482**	**17**	**41,275**	**$ 87,582**	**19**	**54,815**	**$109,157**
Contractors' Off-Highway								
113-199 brake hp	1,247	$ 16,424	7	1,582	$ 20,642	6	2,575	$ 37,442
200 brake hp and over	967	17,316	7	1,362	23,039	5	1,451	22,405
Total—Contractors' Off-Highway	**2,214**	**$ 33,740**	**7**	**2,944**	**$ 43,681**	**6**	**4,026**	**$ 59,847**
Total—Wheel Type	**199,816**	**$343,250**	**44**	**390,386**	**$590,322**	**41**	**417,177**	**$615,676**
Tracklaying Type								
9-24 drawbar hp	4,039	$ 6,573	7	6,403	$ 10,104	11	15,163	$ 34,216
25-34 drawbar hp	4,852	13,296	5	5,857	18,215	..	.....	.....
35-49 drawbar hp	9,813	49,974	4	15,959	77,014	4	13,352	61,066
50-79 drawbar hp	5,880	46,512	4	9,194	69,298	3†	.679†	43,682†
80-119 drawbar hp	3,626	37,344	3	7,400	71,256	3‡	6.349‡	54,939‡
120 drawbar hp	2,940	44,280	4	5,784	82,807	4§	4.612§	68,938§
Total—Tracklaying Type	**30,165**	**$197,979**	**11**	**50,597**	**$328,696**	**12**	**48,155**	**$280,841**
Garden Tractors incl. Motor Tillers			**55**	**211,798**	**$ 29,269**	**76**	**202,492**	**$ 28,098**
Total—All Tractors	**229,981¶**	**$541,229¶**	**110**	**652,781**	**$948,287**	**117**	**667,824**	**$924,615**

* Data for nine months only. † 50 to 69 hp group. ‡ 70 to 94 hp group. § 95 hp and over. ¶ Excluding Garden Tractors.

• PRODUCTION •

Factory Sales of Special Types of Vehicles

Automobile Manufacturers Association

Vehicles Type	1954	1953	1952	1951	1950	1949
Station Wagons[1]	264,234	318,178	189,661	194,232	159,944	104,618
Motor Coaches[2]	4,039	4,057	5,375	9,460	4,908	5,511
School Bus Chassis	22,465	21,284	19,452	31,891	19,953	13,896
Trucks with Cab-Over-Engine	26,268	24,712	19,592	25,482	22,370	12,326
Trucks with Diesel Engines	10,546	10,872	13,166	16,494	13,903	6,047
Trucks with 6 wheels, 3 axles	....	....	....	36,429	15,719	4,122
Multi-Stop Trucks	19,507	19,246	18,493	28,867	21,631	19,479
Ambulances and Funeral Vehicles	2,880	3,034	2,662	4,177	2,971	2,853

[1] Includes station wagons built on truck chassis. [2] Does not include nonintegral school buses.

Shipments of Motor Scooters, Motorcycles, Motorbikes and Parts

As reported by Industry Division, Bureau of the Census

Vehicle	Value at Plant
Motor scooters	$12,475,000
Motorcycles, motorbikes, parts for motorcycles	27,203,000
Parts for motorbikes and motor scooters	1,625,000
Total—1947	$41,303,000
Total—1951	$18,253,000
Total—1952	$18,943,000
Total—1953	$17,124,000

Shipments of Auto Replacement Batteries

As reported by The Ass'n of American Battery Manufacturers.

Year	Shipments for Replacement	Year	Shipments for Replacement
1943	16,999,000	1949	19,383,000
1944	19,115,000	1950	24,442,000
1945	17,560,000	1951	22,219,000
1946	17,522,000	1952	22,453,000
1947	25,828,000	1953	23,614,000
1948	25,075,000	1954	23,147,000

Value Added by Manufacture, Cost of Materials, and Value of Shipments for Selected Industries

As reported by the Industrial Division, Bureau of the Census

All Figures are in Thousands.

Industry	1953			1952			1947		
	Value Added by Manufacture	Cost of Materials, Fuels, Electricity, Contract Work	Value of Products Shipped	Value Added by Manufacture	Cost of Materials, Fuels, Electricity, Contract Work	Vaule of Products Shipped	Value Added by Manufacture	Cost of Materials, Fuels, Electricity, Contract Work	Value of Products Shipped
Motor Vehicles and Parts	$6,938,073	(1)	(2)	$5,735,414	(1)	(1)	$3,577,404	(1)	(1)
Truck and Bus Bodies	126,013	$132,433	$ 258,446	136,051	$135,606	$ 271,657	127,429	$114,868	$242,297
Truck Trailers	147,458	243,520	390,978	104,298	188,728	293,026	65,257	85,596	150,853
Automotive Trailers	78,591	162,848	241,439	(2)	(2)	(2)	48,986	85,987	134,973
Internal-combustion Engines	$527,542	$648,785	$1,176,330	$ 506,503	$600,127	$1,106,930	$ 327,152	$356,385	$683,537
Tractors	$677,757	$947,652	$1,625,409	$ 683,062	$958,120	$1,641,182	$ 332,062	$558,779	$890,841

(1)—Cost of materials and value of products are not shown for industries for which these figures contain extensive duplication.
(2)—Withheld because the estimate did not meet publication standards.

Shipments of Car, Truck and Bus Tires

As reported by the Rubber Manufacturers Association

Year	SHIPMENTS				Production	Inventory
	Original Equipment	Replacement	Export	Total		
Passenger Car Casings						
1954	29,746,307	47,043,297	927,672	77,717,276	76,805,822	12,228,300
1953	33,696,490	45,874,056	896,199	79,778,745	81,430,817	13,043,054
1952	24,106,077	45,457,870	740,954	70,304,901	74,341,140	11,251,974
1951	26,728,553	34,226,242	723,242	61,678,037	65,545,941	6,973,419
1950	36,678,352	47,102,627	641,987	84,422,966	78,598,174	3,050,501
1949	28,128,583	36,439,572	508,565	65,076,720	65,140,287	8,903,731
1948	21,589,040	41,295,434	655,686	63,540,160	66,738,436	8,772,822
1947	19,644,143	52,857,228	1,608,882	74,109,453	77,795,299	5,444,071
1946	11,086,542	54,684,036	652,643	66,423,221	66,466,319	1,763,472
1945	1,115,295	25,462,305	222,375	26,799,975	28,199,792	2,214,517
Truck and Bus Casings						
1954	3,591,804	8,110,788	826,306	12,528,898	12,346,900	2,545,905
1953	4,827,624	9,317,012	723,954	14,868,590	14,690,498	2,662,741
1952	5,377,635	8,884,074	779,097	15,040,776	16,069,975	2,859,156
1951	5,424,030	10,285,636	954,018	16,763,684	17,859,026	1,791,367
1950	4,670,782	9,704,975	788,450	15,164,208	14,155,842	743,216
1949	3,455,781	7,026,115	958,420	11,440,316	11,328,460	1,734,456
1948	5,256,413	7,852,877	1,131,812	14,241,102	14,575,981	1,925,493
1947	5,411,521	10,013,994	1,648,396	17,073,911	17,754,837	1,505,221
1946	4,223,610	10,906,211	859,369	15,989,190	15,831,862	684,800
1945	4,863,993	11,016,111	282,028	16,167,132	16,324,121	862,664
Total Automotive Casings						
1954	33,338,111	55,154,085	1,753,978	90,246,174	89,152,722	14,774,205
1953	37,936,124	55,191,068	1,540,153	94,647,345	96,121,315	15,705,795
1952	29,483,712	54,341,944	1,519,961	85,345,617	90,411,115	14,110,230
1951	32,152,583	44,511,878	1,677,260	78,441,721	83,404,277	8,764,786
1950	41,349,135	56,807,602	1,430,437	99,587,174	92,754,016	3,793,717
1949	31,584,364	43,465,687	1,466,985	76,517,036	76,468,747	10,638,187
1948	26,845,453	49,148,311	1,787,498	77,781,262	81,314,417	10,698,225
1947	25,055,664	62,871,222	3,256,478	91,183,364	95,550,136	6,949,292
1946	15,310,152	65,590,247	1,512,012	82,312,411	82,298,181	2,448,272
1945	5,984,288	36,478,416	504,402	42,967,107	44,523,913	3,077,181

CANADIAN STATISTICS

From Canadian Automobile Chamber of Commerce

Motor Vehicle Production in Canada

In Units and Their Value

Year	PASSENGER CARS: Number of Units†	PASSENGER CARS: Wholesale Value	PASSENGER CARS: Average Wholesale Value	TRUCKS AND BUSES: Number of Units†	TRUCKS AND BUSES: Wholesale Value	TRUCKS AND BUSES: Average Wholesale Value	TOTAL: Number of Units	TOTAL: Wholesale Value
1925	135,573	$ 86,158,775	$ 635	26,397	$ 12,224,486	$ 463	161,970	$ 98,393,269
1926	166,887	106,000,208	635	37,840	16,629,324	439	204,727	122,629,537
1927	146,421	100,962,211	689	32,633	14,942,017	458	179,054	115,904,228
1928	197,848	127,263,877	642	44,206	21,913,122	496	242,054	149,176,999
1929	268,307	134,023,280	659	59,318	29,474,395	497	262,625	163,497,675
1930	121,227	75,253,581	620	32,035	16,513,225	515	153,272	91,766,806
1931	65,072	42,634,173	655	17,487	10,330,762	591	82,559	52,964,936
1932	50,694	32,490,129	641	10,095	6,070,667	601	60,789	38,560,796
1933	52,849	32,565,268	616	12,003	6,042,195	503	64,852	38,630,463
1934	92,647	57,360,156	618	24,205	12,770,318	528	116,852	70,030,474
1935	135,562	79,209,276	584	37,315	19,803,771	531	172,877	99,013,047
1936	128,369	76,814,258	598	33,790	19,140,946	566	162,159	95,955,204
1937	163,946	93,268,292	610	54,417	30,389,011	558	207,463	123,757,293
1938	123,767	81,661,687	660	42,295	26,497,038	626	166,080	108,158,725
1939	108,369	71,101,304	656	47,057	28,072,713	597	155,426	99,173,916
1940	109,911	83,544,445	760	113,102	91,191,516	806	223,013	174,735,961
1941	96,603	81,167,694	840	173,588	163,414,253	941	270,191	244,581,947
1942	12,236	10,305,013	842	216,057	229,103,128	1,060	228,293	239,408,741
1943	.....	.....	....	178,064	222,393,092	1,249	178,064	222,393,092
1944	.....	.....	....	168,038	213,359,582	1,269	168,038	213,359,582
1945	1,868	1,638,118	877	130,777	167,103,012	1,278	132,645	168,741,130
1946	91,871	82,647,330	902	79,557	81,204,338	1,019	171,428	164,051,668
1947	167,357	183,161,183	1,089	90,758	116,367,486	1,282	258,015	299,518,669
1948	166,819	210,799,512	1,264	96,941	137,328,722	1,415	263,760	348,028,234
1949	192,556	277,660,998	1,434	99,028	146,697,354	1,481	292,584	424,358,352
1950	284,676	447,029,182	1,574	106,026	163,942,858	1,546	390,102	610,972,040
1951	282,714	438,613,532	1,551	132,706	212,806,696	1,604	415,420	651,420,227
1952	283,534	417,054,445	1,473	150,176	259,247,296	1,680	433,710	676,301,744
1953	340,385	539,524,001	1,497	120,574	199,082,949	1,651	460,959	738,606,950
1954	284,579	.....	....	67,187	.....	....	351,566	.....

† Production figures include all wheeled vehicles for military use. Universal carriers and scout cars are not included.

Canadian Motor Vehicle Production by Months

	1954	1953	1952	1951	1950	1949	1948	1947
January	40,930	35,894	34,252	39,204	26,527	13,862	16,715	18,700
February	44,992	42,902	32,448	40,592	30,137	17,197	16,382	20,331
March	45,771	51,990	34,209	47,779	30,051	25,566	27,112	22,491
April	46,432	52,420	46,908	41,060	26,386	26,685	24,243	21,891
May	37,984	50,590	42,690	42,911	25,281	26,708	21,368	21,665
June	30,020	49,900	41,110	36,229	41,383	30,096	23,362	21,137
July	25,692	45,691	34,314	30,294	40,131	25,388	15,106	21,907
August	13,362	22,640	22,853	21,533	24,272	20,475	16,959	15,659
September	11,377	38,021	41,065	29,861	38,035	30,894	23,775	24,205
October	11,860	35,895	41,659	32,462	35,573	28,125	25,057	25,479
November	17,213	19,931	31,340	29,461	30,322	19,721	26,794	23,240
December	25,932	35,050	30,682	23,734	30,004	27,871	26,887	21,310
Total	351,566	480,959	433,710	415,420	390,102	292,584	263,760	258,015

1953 Canadian Motor Vehicle Registrations—by Provinces

Province	Passenger Cars	Motor Trucks	Motor Buses	Other Motor Vehicles†	Total Motor Vehicles	Motor-cycles	Trailers
Newfoundland	20,509	8,193	200	276	29,178	298	231
Prince Edward Island	12,218	5,424	15	2,508	20,286	121	1,057
Nova Scotia	89,965	33,396	297	5,338	129,461	1,365	4,277
New Brunswick	63,041	22,190	431	7,959	93,914	1,193	5,063
Quebec	440,720	139,418	3,464	18,973	617,651	15,076	31,797
Ontario	1,117,175	275,742	3,648	...	1,404,119	13,334	80,673
Manitoba	146,912	34,316	192	2,277	204,659	1,762	11,775
Saskatchewan	157,412	97,631	120	1,596	257,584	925	10,275
Alberta	206,358	107,866	2,282	...	316,812	2,396	1,220
British Columbia	258,940	93,521	1,193	2,544	356,023	3,825	15,417
Yukon and N.W. Territory	1,768	1,739	26	56	3,592	9	130
Total—Canada—1953	2,513,138	825,476	12,162	40,227	3,431,797	40,194	161,915
Total—Canada—1952	2,296,479	770,959	12,921	26,647	3,157,209	42,072	146,579
Total—Canada—1951	2,004,540	658,631	12,990	29,861	2,825,228	43,108	135,271

†—Includes road tractors, ambulances, fire trucks, hearses, government and municipal vehicles.



NEW REGISTRATIONS

★ ★ ★ ★ **PASSENGER CARS • TRUCKS**

New Passenger Car Registrations by Makes, by Years

Based on data from R. L. Polk & Co.

Make of Car	1954 Units	1954 % of Total	1953 Units	1953 % of Total	1952 Units	1952 % of Total	1951 Units	1951 % of Total	1950 Units	1950 % of Total
Hudson	35,824	.65	66,797	1.16	78,569	1.89	96,847	1.91	134,219	2.12
Nash	82,729	1.49	137,507	2.40	142,520	3.43	140,035	2.77	175,722	2.78
Total—American Motors	**118,553**	**2.14**	**204,304**	**3.56**	**221,029**	**5.32**	**236,882**	**4.68**	**309,941**	**4.90**
Chrysler	101,741	1.84	153,756	2.68	113,392	2.73	149,435	2.95	151,300	2.39
De Soto	76,739	1.39	122,362	2.13	91,677	2.20	112,643	2.23	115,028	1.82
Dodge	154,789	2.80	288,812	5.03	246,464	5.93	298,603	5.90	300,104	4.74
Plymouth	381,078	6.87	600,447	10.46	433,134	10.41	542,649	10.72	547,367	8.65
Total—Chrysler Motors	**714,347**	**12.90**	**1,165,357**	**20.30**	**884,667**	**21.27**	**1,103,330**	**21.80**	**1,113,795**	**17.60**
Ford	1,400,440	25.30	1,116,267	19.45	732,481	17.61	862,309	17.04	1,166,118	18.43
Lincoln	36,251	.65	39,169	.68	29,110	.70	25,816	.51	34,318	.54
Mercury	269,926	4.88	287,717	5.02	185,883	4.47	233,339	4.61	318,217	5.03
Total—Ford Motor	**1,706,617**	**30.83**	**1,443,153**	**25.15**	**947,474**	**22.78**	**1,121,464**	**22.16**	**1,518,653**	**24.00**
Buick	513,497	9.28	454,320	7.92	310,806	7.47	392,285	7.75	535,807	8.47
Cadillac	110,328	1.99	98,612	1.72	87,806	2.11	97,093	1.92	101,825	1.61
Chevrolet	1,417,453	25.61	1,342,480	23.39	852,542	20.50	1,067,042	21.08	1,420,399	22.45
Oldsmobile	407,150	7.35	305,593	5.32	218,189	5.25	273,472	5.40	372,519	5.89
Pontiac	358,167	6.47	385,692	6.72	266,351	6.41	337,821	6.68	440,528	6.96
Total—General Motors	**2,806,595**	**50.70**	**2,586,697**	**45.07**	**1,735,694**	**41.74**	**2,167,713**	**42.83**	**2,871,078**	**45.38**
Packard	38,396	.69	71,079	1.24	66,346	1.60	66,999	1.32	73,155	1.16
Studebaker	95,914	1.74	161,257	2.81	157,902	3.80	205,514	4.08	268,229	4.24
Total—S.-P. Corp.	**134,310**	**2.43**	**232,336**	**4.05**	**224,248**	**5.40**	**272,513**	**5.40**	**341,384**	**5.40**
Henry J	....	....	11,385*	.20	30,284*	.73	51,372	1.02	26,323†	.42
Kaiser	5,859	.16	22,825	.40	41,022	.99	52,286	1.03	85,832	1.35
Willys	17,002	.31	42,433	.74	41,016	.99	26,049	.51	33,926	.53
Total Willys Motors	**25,891**	**.47**	**76,643**	**1.34**	**112,322**	**2.71**	**129,707**	**2.56**	**145,981**	**2.30**
Crosley	....	....	....	....	2,679	.06	5,304	.10	6,896	.11
Misc. Domestic	3,766	.07	1,538	.03	982	.02	3,162	.06	2,375	.04
Total—All Others	**3,766**	**.07**	**1,538**	**.03**	**3,661**	**.08**	**8,466**	**.16**	**9,271**	**.15**
British Austin	1,528	.03	3,087	.05	4,804	.12	3,800	.08	5,452	.09
British Ford	1,622	.03	3,644	.06	3,854	.09	3,506	.07	3,869	.04
British Hillman	2,430	.04	4,506	.08	4,782	.11	....	....	....	....
British Jaguar	3,365	.06	3,914	.07	3,349	.08	....	....	....	....
British MG	3,454	.06	6,606	.11	7,449	.18	....	....	....	....
Misc. Foreign	12,986	.24	7,204	.13	5,061	.12	13,520	.26	9,015	.14
Total—Foreign	**25,385**	**.46**	**28,961**	**.50**	**29,299**	**.70**	**20,826**	**.41**	**16,376**	**.27**
Total—All Makes	**5,535,464**	**100.00**	**5,738,989**	**100.00**	**4,158,394**	**100.00**	**5,060,903**	**100.00**	**6,326,433**	**100.00**

*—Includes Allstate. †—Includes Frazer.

New Truck Registrations by Makes, by Years

Based on data from R. L. Polk & Co.

Make of Truck	1954 Units	1954 % of Total	1953 Units	1953 % of Total	1952 Units	1952 % of Total	1951 Units	1951 % of Total	1950 Units	1950 % of Total
Autocar	1,041	.12	1,712	.18	1,595	.19	2,112	.21	2,072	.18
Brockway	1,346	.16	2,080	.22	1,752	.22	2,182	.22	2,384	.21
Chevrolet	293,079	35.34	327,960	35.22	272,249	33.51	350,344	34.91	414,496	36.28
Crosley	....	....	....	....	†	....	†	....	422	.04
Diamond T	2,701	.33	3,298	.36	3,420	.42	4,508	.45	5,675	.50
Divco	2,505	.30	2,569	.28	2,752	.34	3,752	.37	4,309	.38
Dodge	60,658	7.32	82,345	8.85	102,129	12.58	106,600	10.62	99,716	8.72
Federal	248	.03	986	.11	841	.10	1,008	.10	1,469	.13
Ford	267,799	32.30	266,027	28.60	179,523	22.11	250,802	24.98	315,912	27.66
F.W.D.	393	.05	359	.04	543	.07	501	.05	723	.63
G.M.C.	66,664	8.04	82,296	8.85	79,612	9.80	100,235	9.99	97,200	8.51
International	84,222	10.15	95,404	10.25	92,788	11.42	95,184	9.48	97,818	8.56
Kenworth	697	.08	747	.08	765	.09	665	.07	673	.06
Mack	6,098	.74	6,890	.74	7,158	.88	9,794	.98	9,908	.87
Peterbilt	344	.04	332	.04	236	.03	†	....	†	....
Pontiac	....	....	468	.05	541	.07	908	.09	1,362	.12
Reo	2,282	.28	3,498	.38	3,393	.42	3,427	.34	3,876	.34
Studebaker	10,193	1.23	22,473	2.42	28,985	3.57	32,675	3.25	45,881	4.02
White	10,340	1.25	12,261	1.32	10,858	1.34	12,260	1.22	12,056	1.05
White Sterling	†	....	†	....	250	.03	334	.03	354	.03
Willys—Jeep	7,598	.92	9,247	.99	8,594	1.06	9,002	.90	8,841	.77
Willys—Truck	9,925	1.20	8,465	.91	11,762	1.45	15,290	1.52	15,799	1.38
All Others	993	.11	794	.08	2,433	.30	2,214	.22	1,767	.15
Total	**829,101**	**100.00**	**930,312**	**100.00**	**812,000**	**100.00**	**1,003,850**	**100.00**	**1,142,307**	**100.00**

†—Included with All Others.

• NEW REGISTRATIONS •

New Car Registrations by Months, 1950-1954

Based on data from R. L. Polk & Co.

	1954*		1953		1952		1951		1950	
	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total
January	340,698	6.15	386,221	6.72	301,379	7.25	472,766	9.34	381,562	6.03
February	369,682	6.68	396,548	6.91	295,459	7.10	430,797	8.51	408,990	6.46
March	480,641	8.68	486,268	8.47	322,857	7.76	512,599	10.13	495,885	7.84
April	508,102	9.18	528,278	9.20	374,288	9.00	467,313	9.23	471,215	7.45
May	520,958	9.41	540,575	9.42	422,217	10.15	470,446	9.30	488,361	7.72
June	596,719	10.78	542,025	9.45	423,655	10.19	454,665	8.98	583,922	9.23
July	474,316	8.57	533,783	9.30	340,454	8.19	406,333	8.03	609,926	9.64
August	440,312	7.95	502,439	8.75	215,668	5.19	424,422	8.39	683,995	10.81
September	407,844	7.37	453,806	7.91	318,870	7.67	406,217	8.03	625,755	9.89
October	389,352	7.03	564,697	8.79	383,385	9.22	373,162	7.37	586,373	9.17
November	378,513	6.84	450,311	7.85	360,256	8.66	332,099	6.56	444,193	7.03
December	628,327	11.36	413,937	7.22	399,906	9.62	310,984	6.13	552,259	8.73
Total	5,535,464	100.00	5,738,989	100.00	4,158,394	100.00	5,060,903	100.00	6,326,438	100.00

*—Monthly totals as reported by R. L. Polk & Co. adjusted to conform to year-to-date totals.

New Truck Registrations by Months, 1950-1954

Based on data from R. L. Polk & Co.

	1954		1953		1952		1951		1950	
	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total
January	60,766	7.32	72,606	7.80	59,661	7.35	88,058	8.77	67,925	5.95
February	60,826	7.34	68,616	7.38	59,285	7.30	78,581	7.83	71,698	6.28
March	72,578	8.75	79,672	8.57	63,384	7.80	86,287	8.60	96,266	8.43
April	75,332	9.09	91,127	9.79	73,461	9.05	84,961	8.46	92,241	8.07
May	78,289	9.43	86,274	9.27	71,690	8.82	90,267	9.03	90,786	7.95
June	85,858	10.36	77,189	8.30	71,471	8.80	87,461	8.71	91,512	8.01
July	64,993	7.84	76,161	8.19	72,134	8.88	84,021	8.37	117,040	10.24
August	64,173	7.74	76,642	8.24	57,786	7.12	87,646	8.73	125,633	11.98
September	66,174	7.98	78,319	8.42	65,381	8.05	84,814	8.45	113,784	9.96
October	69,234	8.35	82,625	8.88	77,486	9.54	92,281	9.19	101,169	8.86
November	64,123	7.73	72,422	7.78	70,477	8.68	76,517	7.62	84,167	7.37
December	66,855	8.07	68,659	7.38	69,903	8.61	62,596	6.24	89,186	7.80
Total	829,101	100.00	930,312	100.00	812,090	100.00	1,003,850	100.00	1,142,307	100.00

New Motor Vehicle Registrations, by States

Based on data from R. L. Polk & Co.

	NEW PASSENGER CARS			NEW TRUCKS			TOTAL MOTOR VEHICLES		
	1954	1953	1952	1954	1953	1952	1954	1953	1952
Alabama	72,893	71,078	51,674	17,247	19,653	17,721	90,140	90,731	68,795
Arizona	24,999	24,926	18,791	7,324	7,160	6,611	32,323	32,086	25,402
Arkansas	37,589	41,599	28,709	16,102	18,257	16,890	53,691	59,856	45,599
California	434,789	452,769	346,929	63,966	69,345	58,661	498,755	522,114	405,590
Colorado	56,007	44,558	34,946	16,342	11,180	10,892	56,349	55,738	45,838
Connecticut	86,202	87,629	63,768	7,487	8,214	7,324	92,689	95,843	71,092
Delaware	17,101	18,498	12,329	2,527	2,734	2,383	19,628	21,232	14,712
Dist. of Columbia	25,169	24,892	20,930	2,187	2,728	2,433	27,356	27,620	23,363
Florida	131,433	120,439	80,905	22,072	23,340	19,980	153,505	143,779	100,885
Georgia	98,437	94,643	72,240	24,601	23,441	21,464	123,038	118,084	93,704
Idaho	19,187	23,776	18,735	5,976	7,607	6,612	25,163	31,383	25,347
Illinois	398,306	406,069	295,729	37,376	45,436	34,479	435,682	449,505	330,208
Indiana	172,344	182,962	122,339	24,212	29,108	21,374	196,556	212,070	143,713
Iowa	98,534	100,797	71,700	18,308	20,190	15,914	116,842	120,987	87,614
Kansas	86,826	83,127	63,172	16,371	18,277	18,108	103,197	101,404	81,280
Kentucky	66,927	72,423	51,716	15,658	18,525	15,364	82,585	90,948	67,350
Louisiana	83,500	77,655	53,850	18,539	19,795	15,714	102,039	97,450	69,564
Maine	23,266	24,283	16,967	5,023	5,559	5,216	28,289	29,842	22,183
Maryland	87,142	89,494	66,831	9,881	11,199	9,856	97,023	100,693	76,417
Massachusetts	155,881	159,527	115,195	12,530	12,291	12,974	168,411	171,818	128,169
Michigan	375,425	423,454	287,842	34,776	40,795	33,711	410,401	464,249	321,553
Minnesota	116,896	123,661	91,598	17,223	19,054	16,404	133,919	142,715	108,002
Mississippi	47,000	45,176	32,681	16,180	18,374	16,054	63,180	63,550	48,735
Missouri	147,737	159,971	86,788	23,498	29,067	22,582	171,235	189,038	119,370
Montana	22,762	24,869	20,160	7,201	8,001	7,664	29,904	32,870	27,824
Nebraska	53,216	58,278	43,907	11,571	13,123	13,115	64,787	71,401	57,022
Nevada	8,052	7,846	5,794	2,161	2,130	1,841	10,213	9,976	7,635
New Hampshire	18,138	17,680	14,095	2,898	2,924	2,711	21,037	20,604	16,806
New Jersey	216,976	211,073	148,926	21,047	23,500	18,782	237,123	234,573	167,719
New Mexico	22,568	21,248	15,462	7,059	6,428	5,885	29,567	27,676	21,347
New York	481,978	485,032	342,044	41,352	47,704	41,788	522,430	532,736	383,832
North Carolina	96,986	110,364	78,399	22,130	26,685	23,696	119,116	137,049	102,095
North Dakota	21,454	24,075	18,091	5,221	6,128	5,832	26,875	30,203	24,023
Ohio	331,768	359,016	257,446	35,857	42,510	36,090	367,625	401,566	293,536
Oklahoma	76,428	78,336	55,962	18,656	22,257	18,750	95,084	100,593	74,712
Oregon	54,814	60,558	51,215	11,941	13,415	12,712	66,755	74,272	63,927
Pennsylvania	359,823	413,057	302,867	38,654	47,965	40,949	398,476	461,022	343,816
Rhode Island	27,183	27,728	20,027	2,444	2,662	2,384	29,627	30,390	22,411
South Carolina	47,052	54,251	37,789	9,832	12,397	12,151	56,884	66,648	49,940
South Dakota	22,164	21,598	17,878	4,908	5,465	5,485	27,072	27,063	23,363
Tennessee	91,224	88,369	59,426	18,254	20,881	18,117	109,482	109,250	77,543
Texas	349,509	321,374	238,487	72,059	74,857	68,793	421,568	396,231	307,480
Utah	19,366	21,884	18,190	4,429	4,748	4,944	23,795	26,632	23,134
Vermont	11,926	12,672	8,818	2,514	2,705	2,527	14,440	15,377	11,345
Virginia	113,992	108,282	89,228	17,373	17,685	18,315	131,365	125,917	107,543
Washington	63,579	68,282	50,449	12,480	13,718	11,632	76,059	81,920	62,081
West Virginia	39,154	43,875	32,631	7,136	9,724	7,929	46,284	53,599	40,560
Wisconsin	126,572	132,389	97,225	16,329	18,794	16,745	136,901	151,183	113,970
Wyoming	12,916	13,317	11,104	4,190	4,477	4,440	17,106	17,794	15,544
Total	5,535,464	5,738,989	4,158,394	829,101	930,312	812,090	6,364,365	6,669,301	4,970,493

1954 New Registrations by Price Classes—by Months†

Month	Under $2,000 Units	Under $2,000 % of Total	$2,001-$2,500 Units	$2,001-$2,500 % of Total	$2,501-$3,500 Units	$2,501-$3,500 % of Total	Over $3,500 Units††	Over $3,500 % of Total	Total Units	Total % of Total
January	283,727	60.04	96,364	26.63	33,353	9.83	11,864	3.50	339,308	100.00
February	216,435	58.82	97,367	26.46	34,000	9.24	20,168	5.48	367,970	100.00
March	275,910	57.62	124,894	26.08	57,118	11.93	20,906	4.37	478,828	100.00
April	297,493	58.80	128,415	25.38	59,024	11.67	21,019	4.15	505,951	100.00
May	309,563	59.68	130,956	25.25	58,282	11.24	19,874	3.83	518,675	100.00
June	376,191	63.31	138,125	23.25	59,360	9.99	20,512	3.45	594,188	100.00
July	279,479	59.23	123,281	26.13	51,290	10.87	17,786	3.77	471,836	100.00
August	258,506	59.04	116,815	26.67	46,301	10.57	16,303	3.72	437,925	100.00
September	242,493	59.78	106,765	26.32	40,387	9.96	15,964	3.94	405,609	100.00
October	233,003	59.22	105,725	26.87	40,030	10.17	14,700	3.74	393,458	100.00
November	226,834	59.92	105,115	27.77	37,834	9.99	8,771	2.32	378,554	100.00
December	434,034	66.41	138,912	21.26	63,097	9.66	17,416	2.67	653,459	100.00
Total	3,353,668	60.47	1,406,734	25.37	580,076	10.46	205,283	3.70	5,545,761††	100.00

†—Based on new registrations of American made cars only, as reported by R. L. Polk & Co. ††—Both monthly and yearly totals will not correspond with totals of new car registrations shown elsewhere in this issue due to adjustments made by R. L. Polk & Co. in monthly data. Unfortunately it is impossible for us to eliminate these adjustments from our totals at this time.

1954 Retail Dollar Volume of New Car Sales—by Price Classes*

Month	Under $2,000 Value*	Under $2,000 % of Total	$2,001-$2,500 Value*	$2,001-$2,500 % of Total	$2,501-$3,500 Value*	$2,501-$3,500 % of Total	Over $3,500 Value*	Over $3,500 % of Total	Total Value*	Total % of Total
January	$ 371,124,726	52.21	$ 205,288,500	28.88	$ 91,107,163	12.82	$ 43,295,499	6.09	$ 710,815,888	100.00
February	394,261,411	50.26	221,999,965	28.30	90,855,649	11.58	77,305,227	9.86	784,362,252	100.00
March	502,344,088	48.95	285,897,109	27.86	157,160,759	15.31	80,893,068	7.88	1,026,295,024	100.00
April	541,974,420	50.19	293,994,402	27.22	162,143,107	15.01	81,829,369	7.58	1,079,941,298	100.00
May	563,243,980	51.21	300,127,159	27.28	159,246,280	14.47	77,500,496	7.04	1,100,111,915	100.00
June	685,457,177	55.99	316,633,196	25.44	162,290,769	13.04	80,009,647	6.43	1,244,390,809	100.00
July	509,289,100	50.87	282,897,893	28.25	139,807,107	13.96	69,275,573	6.92	1,001,269,676	100.00
August	471,272,739	50.73	267,982,505	28.84	126,284,907	13.59	63,543,406	6.84	929,085,557	100.00
September	440,965,015	51.41	244,926,486	28.56	119,114,128	12.84	61,652,545	7.19	857,658,174	100.00
October	438,429,541	51.61	245,029,704	28.85	109,192,652	12.85	56,790,064	6.69	849,441,961	100.00
November	429,421,130	52.75	244,000,719	29.97	105,891,527	13.01	34,792,366	4.27	814,105,736	100.00
December	824,764,041	58.91	324,719,277	23.20	180,035,418	12.86	70,352,053	5.03	1,399,870,789	100.00
Total	$6,172,487,368	52.32	$3,233,496,917	27.41	$1,594,123,461	13.51	$797,241,327	6.76	$11,797,349,073	100.00

*—Calculated on the basis of new car registrations, as reported by R. L. Polk & Co., in conjunction with the advertised delivered price at factory of four-door sedan or equivalent model.

1954 New Passenger Car Registrations by Makes by States

Based on data from R. L. Polk & Co.

State	Buick	Cadillac	Chevrolet	Chrysler	De Soto	Dodge	Ford	Hudson	Kaiser	Lincoln	Mercury	Nash	Oldsmobile	Packard	Plymouth	Pontiac	Studebaker	Willys	Misc. Dom.	Foreign	Total
Ala.	5,735	922	23,886	1,008	620	1,728	21,406	268	41	316	2,759	564	3,925	241	4,423	4,076	739	112	15	109	72,893
Ariz.	2,250	548	6,355	443	298	693	6,668	146	53	220	1,289	450	1,589	221	1,763	1,256	484	175	7	101	24,999
Ark.	2,586	497	11,034	442	358	979	11,307	193	32	180	1,572	242	2,336	132	2,933	2,170	501	62	9	24	37,589
Cal.	43,528	13,353	99,331	6,684	5,472	10,470	107,434	2,067	1,039	4,348	28,424	7,027	35,118	2,447	23,609	23,034	10,135	1,638	182	9,449	434,789
Col.	3,950	923	11,986	986	489	1,460	11,560	427	51	472	2,493	825	3,702	357	2,513	2,685	720	215	3	160	46,007
Conn.	7,912	1,910	17,487	2,346	1,337	3,380	20,363	771	153	657	4,370	1,879	6,349	831	7,161	6,133	1,703	342	27	1,091	86,202
Del.	1,423	334	5,192	240	167	291	4,676	46	13	162	775	112	1,152	91	988	1,051	270	50	1	67	17,101
D. C.	2,049	632	6,058	577	410	687	5,643	155	31	186	1,121	247	1,979	225	2,688	1,895	346	52	10	178	25,169
Fla.	10,918	3,043	35,879	2,287	1,593	2,990	35,244	612	195	1,206	6,212	1,556	9,106	888	8,193	7,287	2,490	621	108	1,095	131,433
Ga.	7,571	1,338	30,382	1,128	732	2,244	28,810	260	134	447	4,508	748	5,554	427	5,730	6,422	1,541	233	59	169	98,437
Idaho	2,137	418	4,592	341	286	601	4,062	206	52	159	1,139	413	1,526	109	1,124	1,211	367	195	1	48	19,187
Ill.	40,857	9,014	102,825	7,896	5,299	10,594	91,112	4,692	607	2,705	18,977	7,555	32,512	3,413	27,206	23,231	6,310	944	1,930	627	398,306
Ind.	16,889	3,134	45,043	2,956	2,554	5,055	43,180	1,389	255	900	6,755	2,786	12,100	1,039	11,185	10,514	5,847	665	44	214	172,344
Iowa	8,153	1,367	27,813	1,681	1,089	3,029	27,536	548	188	491	4,482	1,265	6,692	375	6,140	5,673	1,735	191	17	69	98,334
Kan.	7,173	1,263	24,798	1,315	943	2,404	22,936	673	247	474	3,914	1,641	5,932	418	5,292	5,401	1,631	232	42	97	86,826
Ky.	5,928	860	19,605	831	689	1,804	19,035	238	61	259	2,631	744	4,261	315	3,995	4,192	1,291	117	24	47	66,927
La.	5,538	1,133	27,518	1,093	808	1,946	23,247	145	112	362	3,030	609	4,850	406	5,473	5,260	1,722	93	23	114	83,500
Me.	1,878	317	6,090	399	438	890	5,071	270	42	144	1,099	476	1,235	151	2,137	1,741	397	172	31	88	23,266
Md.	7,329	1,246	22,675	1,541	1,194	2,471	22,959	527	132	481	3,978	1,206	4,860	624	7,790	5,817	1,642	329	31	310	87,142
Mass.	13,393	2,608	35,365	2,865	2,684	4,764	37,122	1,362	218	1,048	7,372	4,009	12,837	1,430	12,864	11,531	2,550	605	69	1,185	155,861
Mich.	42,012	9,766	87,736	5,386	4,134	8,599	108,235	1,890	368	2,470	17,722	4,791	29,788	2,261	20,074	28,415	3,776	630	59	413	375,625
Minn.	10,365	1,878	31,458	2,039	1,615	2,826	31,219	820	242	576	5,284	1,669	9,491	889	7,365	6,207	2,292	320	12	129	116,696
Miss.	3,677	623	15,806	646	484	1,146	12,820	105	26	170	1,770	293	2,515	97	3,306	2,766	640	89	4	17	47,090
Mo.	11,280	2,390	43,327	1,937	1,589	3,135	39,359	482	187	709	7,070	1,986	10,241	843	11,112	8,904	2,338	281	61	206	147,737
Mont.	1,870	445	5,779	440	290	862	5,665	323	61	152	1,033	388	1,894	252	1,543	968	543	165	6	24	22,703
Neb.	5,024	842	14,220	949	509	1,443	14,974	198	105	283	2,720	587	3,583	272	3,379	3,103	846	136	13	30	53,216
Nev.	767	203	1,553	194	145	277	1,787	31	12	100	420	171	692	59	525	456	488	49	2	121	8,052
N. H.	1,348	253	4,582	239	271	707	3,987	330	41	124	765	499	1,156	125	1,498	1,435	414	146	13	105	18,138
N. J.	18,657	5,028	46,199	6,437	4,085	6,414	49,981	1,624	352	1,524	14,339	3,193	15,391	2,290	17,836	16,797	3,851	847	27	1,209	216,076
N. M.	2,246	450	5,949	501	256	699	5,333	104	25	210	1,199	236	1,725	110	1,391	1,514	425	71	7	57	23,508
N. Y.	47,393	11,005	106,606	13,871	10,105	17,700	98,985	3,544	651	3,530	25,194	7,736	37,928	4,028	41,815	38,260	7,803	1,347	500	3,077	481,078
N. C.	8,151	1,617	26,673	1,302	1,165	2,581	27,470	378	83	441	3,778	926	6,391	545	6,579	6,768	1,461	298	17	162	96,986
N. D.	1,506	276	6,439	403	355	658	6,252	90	36	100	865	321	1,446	93	1,611	859	294	29	2	16	21,554
Ohio	32,789	6,743	90,031	6,023	5,520	10,505	94,055	2,378	904	2,181	16,503	4,949	23,887	2,708	20,865	23,884	5,148	1,085	76	674	331,766
Okla.	6,649	1,112	22,032	822	814	1,528	21,633	303	45	513	4,054	715	5,996	273	3,930	4,584	1,133	94	7	93	76,428
Ore.	4,789	1,073	13,353	976	931	1,767	13,753	411	126	391	2,728	1,400	4,494	340	3,588	2,733	1,316	330	7	308	54,814
Pa.	35,094	6,695	90,837	8,126	6,364	12,117	80,373	2,983	766	2,198	15,699	5,209	25,547	4,125	30,950	24,637	5,334	1,700	85	893	359,822
R. I.	2,493	553	6,149	552	403	907	6,056	284	54	194	1,385	789	2,001	145	2,447	1,778	640	81	18	257	27,183
S. C.	3,912	634	14,534	537	496	1,176	13,009	240	41	194	1,575	328	2,957	183	3,294	3,010	568	124	9	171	47,052
S. D.	1,923	266	6,047	403	264	781	6,133	155	74	117	898	359	1,498	167	1,559	1,017	390	105	2	6	22,164
Tenn.	7,327	1,172	27,552	1,101	962	2,358	26,181	320	58	348	3,362	782	5,477	428	6,954	5,213	1,285	185	24	135	91,224
Texas	30,490	6,343	103,318	4,619	2,578	7,208	93,909	858	257	2,380	17,992	2,545	27,705	1,134	16,524	23,009	4,878	496	59	407	349,309
Utah	2,282	416	4,374	471	332	484	4,379	137	56	164	1,127	316	1,865	120	1,082	1,356	294	115	2	34	19,366
Vt.	991	160	3,113	277	142	464	2,757	68	18	54	481	365	567	90	1,167	816	233	93	9	61	11,926
Va.	8,911	1,715	28,918	2,022	1,589	3,072	31,209	1,093	233	564	5,269	1,561	6,939	795	9,240	7,530	2,192	319	58	642	113,992
Wash.	5,449	958	14,332	1,225	1,056	1,977	16,862	600	137	417	2,982	1,765	4,805	561	4,651	3,326	1,551	257	6	662	63,579
W. Va.	3,443	561	10,377	823	555	1,418	10,081	256	46	207	1,550	497	2,168	348	3,428	2,690	659	184	19	44	39,154
Wis.	13,045	2,000	28,816	1,783	1,597	3,151	31,544	995	285	618	4,618	3,682	10,217	732	6,655	7,893	2,153	492	29	267	130,572
Wyo.	1,424	291	3,429	278	174	349	2,978	121	16	85	644	227	1,171	83	633	762	148	91	.....	16	12,910
Total	513,497	110,326	1,417,483	101,741	76,739	134,799	1,460,440	35,824	8,889	36,291	269,926	82,729	407,180	33,396	321,078	298,167	95,914	17,062	2,796	25,385	5,535,464

Regional Sales of New Passenger Cars

Based on data from R. L. Polk & Co.

Zone	Region	1954 Units	1954 % of Total	1953 Units	1953 % of Total	1952 Units	1952 % of Total	1951 Units	1951 % of Total
1	New England	322,496	5.82	329,519	5.74	238,870	5.74	285,555	5.64
2	Middle Atlantic	1,056,976	19.09	1,109,162	19.33	793,847	19.09	967,363	19.11
3	South Atlantic	656,466	11.86	664,688	11.58	491,282	11.81	601,045	11.88
4	East North Central	1,398,615	25.27	1,503,850	26.20	1,060,581	25.51	1,291,498	25.52
5	East South Central	278,044	5.02	277,046	4.83	195,897	4.71	240,562	4.75
6	West North Central	546,827	9.88	571,507	9.96	402,934	9.69	525,624	10.39
7	West South Central	547,026	9.88	518,964	9.04	377,208	9.07	454,793	8.99
8	Mountain	175,732	3.17	182,424	3.18	143,182	3.44	172,543	3.41
9	Pacific	553,182	10.00	581,829	10.14	454,593	10.94	521,920	10.31
	Total—United States	5,535,564	100.00	5,738,989	100.00	4,158,394	100.00	5,060,903	100.00

Regional Sales of New Trucks

Based on data from R. L. Polk & Co.

Zone	Region	1954 Units	1954 % of Total	1953 Units	1953 % of Total	1952 Units	1952 % of Total	1951 Units	1951 % of Total
1	New England	32,897	3.97	34,355	3.70	33,136	4.09	37,418	3.74
2	Middle Atlantic	101,053	12.19	119,169	12.81	101,526	12.51	128,093	12.76
3	South Atlantic	117,732	14.20	129,933	13.97	117,937	14.52	145,874	14.53
4	East North Central	148,550	17.92	174,643	18.77	142,399	17.53	182,531	18.18
5	East South Central	69,343	8.36	77,433	8.32	67,526	8.31	84,569	8.42
6	West North Central	97,100	11.71	111,304	11.96	97,540	12.01	126,412	12.59
7	West South Central	125,356	15.12	135,266	14.54	120,147	14.79	151,055	15.05
8	Mountain	48,682	5.87	51,731	5.56	48,869	6.02	55,837	5.56
9	Pacific	88,387	10.66	96,478	10.37	83,005	10.22	92,061	9.17
	Total—United States	829,101	100.00	930,312	100.00	812,099	100.00	1,003,850	100.00

States comprising the various regions are: Zone 1: Conn., Mass., Me., N. H., R. I., Vt.—Zone 2: N. J., N. Y., Pa.—Zone 3: Del., D. of C., Fla., Ga., Md., N. C., S. C., Va., W. Va.—Zone 4: Ill., Ind., Mich., Ohio, Wisc.—Zone 5: Ala., Ky., Miss., Tenn.—Zone 6: Iowa, Kan., Minn., Mo., Neb., N. D., S. D.—Zone 7: Ark., La., Okla., Tex.—Zone 8: Ariz., Colo., Ida., Mont., Nev., N. M., Utah, Wyo.—Zone 9: Cal., Ore., Wash.

1954 New Truck Registrations by Makes by States

Based on data from R. L. Polk & Co.

State	Auto-car	Brock-way	Chev-rolet	Dia-mond T	Divco	Dodge	Fed-eral	Ford	FWD	GMC	Inter-na-tional	Ken-worth	Mack	Peter-bilt	Rec	Studе-baker	White	Willys Jeep	Willys Truck	All Others	Total
Ala.	7	.....	7,058	14	13	1,104	4	5,684	.....	1,427	1,387	.....	98	.....	11	110	197	78	54	1	17,247
Ariz.	6	.....	2,516	13	6	619	.....	2,351	3	794	562	27	16	.....	16	99	44	88	170	24	7,324
Ark.	.....	1	6,246	30	.....	898	1	5,773	1	1,632	1,203	1	21	.....	9	175	89	61	51	.....	16,102
Cal.	88	18	22,699	215	111	5,590	3	20,890	41	5,944	4,168	214	221	277	109	777	481	824	1,143	153	63,966
Col.	15	.....	3,535	15	48	677	2	2,917	8	1,010	1,019	45	49	5	35	133	56	345	411	17	10,342
Conn.	51	28	2,310	64	91	653	9	2,013	24	608	908	.....	175	.....	56	138	133	99	101	26	7,487
Del.	3	8	969	3	7	178	.....	683	.....	236	267	.....	41	.....	2	22	72	18	13	5	2,527
D. of C.	2	4	717	14	31	325	4	616	.....	173	191	.....	9	.....	12	8	43	17	17	4	2,187
Fla.	6	.....	7,257	89	93	1,366	3	7,570	1	1,918	1,818	.....	324	.....	86	297	337	356	540	11	22,072
Ga.	9	5	8,910	25	22	1,669	.....	8,612	.....	2,020	2,291	1	144	.....	55	404	228	141	63	2	24,601
Idaho	3	.....	1,863	8	1	491	.....	1,611	2	731	680	27	35	2	8	97	22	104	287	4	5,976
Ill.	22	.....	13,142	416	97	2,663	5	11,574	32	2,473	3,181	.....	134	.....	84	498	450	302	205	98	37,376
Ind.	27	.....	8,225	90	66	1,781	6	7,829	3	1,458	2,303	3	69	1	60	497	541	94	112	47	24,212
Iowa	2	1	6,463	47	37	1,175	.....	6,231	2	985	2,784	8	36	2	16	241	97	70	68	3	18,309
Kan.	2	.....	6,129	15	5	901	.....	5,656	1	1,398	1,771	1	11	.....	21	238	95	77	138	2	16,371
Ky.	3	.....	6,048	36	40	880	.....	5,190	13	1,360	1,427	.....	47	.....	42	168	114	146	132	12	15,656
La.	1	.....	7,154	41	26	1,015	.....	6,583	.....	1,482	1,507	.....	66	.....	12	254	89	126	82	1	18,539
Maine	2	3	1,636	19	22	330	.....	1,524	2	497	466	.....	95	.....	9	85	74	101	157	1	5,023
Md.	14	29	3,311	21	34	1,339	16	2,998	1	660	978	.....	115	.....	42	90	127	49	54	3	9,881
Mass.	89	61	3,532	63	125	1,087	10	4,328	6	803	1,130	.....	268	.....	141	178	339	159	202	9	12,530
Mich.	34	.....	12,284	125	275	2,825	21	13,358	4	2,566	2,170	.....	111	.....	124	252	265	243	205	14	34,776
Minn.	1	.....	5,825	46	50	1,072	22	5,794	17	1,283	2,398	7	56	.....	46	232	100	105	142	27	17,223
Miss.	.....	.....	7,577	1	.....	803	1	6,303	1	1,642	1,574	.....	35	1	1	165	33	84	59	.....	18,180
Mo.	1	.....	9,290	47	37	1,302	1	7,431	2	2,319	2,213	1	71	.....	42	267	262	130	78	4	23,498
Mont.	5	.....	2,168	9	2	449	.....	2,083	.....	717	960	22	40	4	11	151	31	157	391	1	7,201
Neb.	5	.....	3,721	91	26	579	1	3,812	8	933	1,994	12	34	4	13	155	85	110	212	106	11,571
Nev.	.....	.....	570	3	1	180	.....	744	3	273	144	5	9	2	.....	83	1	39	102	2	2,161
N. H.	6	8	965	9	14	264	.....	748	.....	248	279	.....	57	.....	21	45	19	95	114	7	2,899
N. J.	71	194	6,345	140	223	1,780	21	6,586	8	1,973	2,036	1	490	.....	55	272	473	145	165	49	21,047
N. M.	16	.....	2,797	12	.....	455	1	1,896	2	791	572	18	70	1	9	105	60	101	151	2	7,059
N. Y.	139	484	12,382	208	395	4,212	34	11,711	48	2,958	3,116	4	835	.....	269	435	886	618	546	133	41,352
N. C.	9	.....	9,138	42	24	1,304	.....	6,910	.....	1,642	1,737	.....	347	.....	27	280	360	127	103	10	22,130
N. D.	1	.....	1,707	1	1	323	.....	1,740	2	355	932	.....	3	.....	.....	57	5	30	64	.....	5,221
Ohio	43	5	11,389	110	220	3,089	12	12,288	13	2,273	4,181	.....	247	.....	211	439	741	290	285	18	35,857
Okla.	8	.....	7,320	1	27	886	2	6,289	34	1,650	1,816	2	66	.....	27	201	176	70	70	5	18,656
Ore.	33	.....	3,469	82	14	970	6	3,222	3	1,335	1,265	108	130	11	17	148	137	201	750	40	11,941
Pa.	92	469	11,882	137	217	3,981	19	11,490	46	2,630	4,955	.....	559	.....	199	505	814	118	471	70	38,654
R. I.	37	4	734	52	23	209	.....	823	.....	130	246	.....	48	.....	7	45	34	8	22	2	2,444
S. C.	3	.....	4,221	7	.....	973	.....	2,997	.....	614	700	4	62	.....	.....	85	100	39	25	2	9,832
S. D.	.....	.....	1,410	73	4	293	.....	1,323	.....	437	933	3	.....	.....	6	90	20	74	101	1	4,908
Tenn.	2	.....	6,850	14	9	1,217	15	6,118	.....	1,579	1,729	.....	114	.....	29	165	315	73	28	1	18,258
Texas	109	.....	30,005	103	87	3,737	2	23,768	2	4,894	6,141	57	314	.....	86	699	1,246	469	330	10	72,059
Utah	7	.....	1,414	10	.....	360	.....	1,092	.....	506	588	22	33	17	12	49	28	82	209	.....	4,429
Vt.	2	7	730	6	4	180	3	721	4	252	294	.....	14	.....	5	64	9	110	127	2	2,514
Va.	23	11	6,077	19	36	1,408	2	5,986	.....	1,267	1,528	.....	155	.....	55	241	213	168	164	21	17,373
Wash.	8	.....	3,902	33	28	1,248	4	3,461	2	1,567	1,504	90	61	14	35	162	49	189	410	11	12,480
W. Va.	11	.....	2,462	11	11	623	7	2,163	2	681	933	.....	99	.....	4	79	63	163	142	6	7,130
Wis.	20	.....	5,636	25	92	1,058	10	5,164	50	1,116	2,311	6	45	1	43	229	196	154	159	24	16,329
Wyo.	6	.....	1,349	6	.....	280	1	1,145	.....	404	492	8	16	2	3	43	11	142	300	2	4,190
Total	1,041	1,349	293,879	2,701	2,905	80,650	348	267,799	393	66,644	84,222	697	6,086	344	2,293	10,193	10,340	7,386	9,025	963	829,101

New Truck Registrations—By Makes and G.V.W.

Based on data from R. L. Polk & Co.

	Year	5,000 lb. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
AUTOCAR	1954	....	....	....	....	....	....	1,041	1,041
	1953	....	....	....	....	....	....	1,713	1,713
	1952	....	....	....	....	....	....	1,595	1,595
BROCKWAY	1954	....	....	....	....	100	128	1,112	1,340
	1953	....	....	....	....	109	197	1,774	2,080
	1952	....	....	....	....	84	178	1,490	1,752
CHEVROLET	1954	161,382	56,206	12,635	62,856	....	....	....	293,079
	1953	188,739	64,398	15,115	59,708	....	....	....	327,960
	1952	142,005	52,903	16,667	59,671	....	....	....	272,249
DIAMOND T	1954	....	....	....	533	472	715	980	2,701
	1953	....	....	....	535	824	1,168	871	3,398
	1952	....	14	1	519	1,037	1,414	435	3,420
DIVCO	1954	....	1,899	606	....	....	....	....	2,505
	1953	....	2,011	558	....	....	....	....	2,569
	1952	....	2,166	586	....	....	....	....	2,752
DODGE	1954	26,081	15,161	1,708	11,406	4,884	974	444	60,658
	1953	37,500	19,865	4,867	12,522	6,253	639	598	82,345
	1952	44,953	24,940	6,228	16,960	7,556	883	602	102,129
FEDERAL	1954	....	....	....	....	23	129	96	248
	1953	....	....	2	7	251	426	300	986
	1952	....	....	5	26	152	247	311	841
FORD	1954	141,839	45,298	14,103	46,916	8,941	7,800	2,902	267,799
	1953	145,548	44,212	15,045	42,562	8,424	9,365	869	266,027
	1952	74,145	32,602	18,072	42,027	4,671	8,006	....	179,523
F.W.D.	1954	....	....	....	15	29	259	90	393
	1953	....	....	....	21	93	195	50	359
	1952	....	....	....	26	93	346	78	543
G.M.C.	1954	24,626	11,821	2,728	12,479	6,025	4,682	4,273	66,644
	1953	31,679	14,284	3,996	15,033	7,184	5,449	4,671	82,296
	1954	29,471	14,396	3,525	16,317	6,366	4,761	4,796	79,612
INTERNATIONAL	1954	30,007	12,603	2,497	14,121	10,565	7,197	7,222	84,222
	1953	32,258	16,423	2,902	17,053	11,406	8,118	6,244	95,404
	1952	27,643	16,654	3,580	19,808	11,767	8,771	4,565	92,788
KENWORTH	1954	....	....	....	....	....	....	697	697
	1953	....	....	....	....	....	....	747	747
	1952	....	....	....	....	....	....	705	705
MACK	1954	....	....	....	....	192	1,270	4,636	6,098
	1953	....	....	....	....	180	1,900	4,810	6,890
	1952	....	....	....	....	212	2,338	4,588	7,138
PETERBILT	1954	....	....	....	....	....	....	344	344
	1953	....	....	....	....	....	....	332	332
	1952	....	....	....	....	....	....	236	236
PONTIAC	1954	....	....	....	....	....	....	....	....
	1953	468	....	....	....	....	....	....	468
	1952	541	....	....	....	....	....	....	541
REO	1954	....	....	....	424	291	1,093	475	2,283
	1953	....	....	....	988	297	1,985	229	3,498
	1952	....	....	....	1,154	177	1,976	86	3,393
STUDEBAKER	1954	5,936	1,946	1,155	1,156	....	....	....	10,193
	1953	12,877	4,442	2,861	2,293	....	....	....	22,473
	1952	17,245	4,680	4,285	2,775	....	....	....	28,985
WHITE	1954	....	....	....	....	834	4,737	4,769	10,340
	1953	....	....	....	....	1,692	6,614	3,955	12,261
	1952	....	....	....	592	1,054	6,966	2,246	10,858
WILLYS-JEEP	1954	7,598	....	....	....	....	....	....	7,598
	1953	9,247	....	....	....	....	....	....	9,247
	1952	8,594	....	....	....	....	....	....	8,594
WILLYS-TRUCK	1954	3,099	6,826	....	....	....	....	....	9,925
	1953	1,372	7,093	....	....	....	....	....	8,465
	1952	3,567	8,205	....	....	....	....	....	11,762
ALL OTHERS	1954	520	....	....	3	9	107	354	993
	1953	309	3	7	5	7	187	276	794
	1952	1,562	....	....	....	....	330	771	2,663
TOTAL	1954	401,688	151,760	35,432	149,919	32,376	29,091	29,435	829,101
	1953	460,997	172,732	45,353	150,729	36,820	36,243	27,438	930,312
	1952	350,739	156,500	52,949	159,881	33,149	36,316	22,505	812,099
	1951	469,625	192,274	70,378	169,900	36,700	43,541	21,322	1,005,850
	1950	556,571	232,465	84,918	169,569	37,000	40,695	21,083	1,142,307
% OF TOTAL	1954	48.38%	18.30%	4.27%	18.08%	3.91%	3.51%	3.55%	100.00%
	1953	49.55%	18.57%	4.87%	16.20%	3.96%	3.90%	2.95%	100.00%
	1952	43.19%	19.28%	6.52%	19.69%	4.08%	4.47%	2.77%	100.00%
	1951	46.80%	19.15%	7.01%	16.92%	3.66%	4.34%	2.12%	100.00%
	1950	48.72%	20.35%	7.36%	14.87%	3.29%	3.56%	1.85%	100.00%

New Car and Truck Registrations—by Years*

Year	New Passenger Cars	New Commercial Vehicles
1929	3,830,206	527,057
1930	2,625,979	410,699
1931	1,908,141	313,384
1932	1,096,399	180,413
1933	1,943,794	245,869
1934	1,888,557	402,886
1935	1,743,908	510,683
1936	3,404,497	611,644
1937	3,483,752	618,249
1938	1,891,021	365,349
1939	2,653,377	486,748
1940	3,415,905	559,150
1941	3,731,164	640,597
1942	204,691	77,422
1943	205,805	62,469
1944	65,720	121,269
1945	71,877	360,932
1946	1,815,196	625,249
1947	3,147,231	879,132
1948	3,490,952	1,035,174
1949	4,838,342	961,961
1950	6,326,439	1,142,307
1951	5,060,903	1,003,850
1952	4,158,394	812,099
1953	5,738,989	930,312
1954	5,536,464	829,101

*Sources: 1929 through February 1942 and 1946 and later years compiled by R. L. Polk & Co. Passenger car data from March, 1942, through July, 1945, are from OPA and represent new car releases to civilian users. Commercial car data from April, 1942, through July, 1945, are from WPB and ODT and represent certificates of transfer issued to civilian users, excluding government exemption permits.

1954 New Car Registrations—by Rank

Make	Units
Chevrolet	1,417,453
Ford	1,400,440
Buick	513,497
Oldsmobile	407,150
Plymouth	381,078
Pontiac	358,167
Mercury	269,926
Dodge	154,789
Cadillac	110,328
Chrysler	101,741
Studebaker	96,914
Nash	82,729
De Soto	76,739
Packard	38,386
Lincoln	36,251
Hudson	35,824
Willys	17,005
Kaiser	8,889
Misc. Foreign	25,385
Misc. Domestic	3,766
Total	5,535,464

1954 New Truck Registrations—by Rank

Make	Units
Chevrolet	293,079
Ford	267,799
International	84,222
G.M.C.	66,644
Dodge	60,658
White	10,340
Studebaker	10,192
Willys Truck	9,925
Willys Jeep	7,598
Mack	6,098
Diamond T	2,701
Divco	2,505
Reo	2,283
Brockway	1,340
Autocar	1,041
Kenworth	697
F.W.D.	393
Peterbilt	344
Federal	248
All Others	993
Total	829,101

DISTRIBUTION OUTLETS

Automotive Wholesalers, Dealers and Repair Shops—By Years

Trade List Department, Chilton Company, as of January of Each Year

	Wholesalers	Passenger Car Dealers	Total Truck Dealers	Car and Truck Dealers	Independent Repair Shops	All Retail Outlets
1930	4,828	51,560	25,436	.....	57,882	117,493
1931	4,668	47,144	26,137	48,658	53,898	118,713
1932	5,051	42,481	25,952	42,708	58,045	108,147
1933	5,337	38,962	23,746	39,370	59,547	103,113
1934	5,450	34,069	.....	35,265	65,064	102,456
1935	5,747	35,977	.....	37,238	64,518	105,991
1936	5,905	39,769	23,045	41,201	60,574	105,579
1937	5,874	41,288	24,853	43,461	56,423	102,808
1938	5,934	43,747	27,248	46,224	51,709	101,053
1939	6,019	39,936	26,909	41,992	50,406	95,413
1940	6,176	39,258	24,575	41,870	49,091	93,764
1941	6,575	39,833	24,992	41,790	49,298	95,296
1942	6,631	38,745	32,291	40,537	57,552	93,022
1943	6,130	32,470	27,820	34,276	43,540	86,863
1944	6,101	31,260	.....	33,009	42,166	78,550
1945	6,217	30,110	26,370	31,930	41,198	78,498
1946	6,612	30,709	27,159	32,439	42,792	81,638
1947	7,328	34,624	29,397	36,354	49,485	91,229
1948	7,982	38,480	25,938†	40,410	55,694	104,564
1949	5,338	46,022	27,584	43,604	59,908	109,499
1950	8,567	43,079	28,307	45,918	63,714	115,926
1951	8,687	43,115	30,297	46,251	71,199	117,450
1952	8,793	42,257	30,009	46,271	70,324	116,595
1953	8,988	45,248	31,149	48,155	72,452	120,607
1954	9,220	44,403	31,055	47,463	74,570	122,038
1955	9,446	42,340	29,189	45,704	77,881	123,585

† Reduction in truck dealers caused by discontinuance of Plymouth truck production.

Automotive Wholesale and Retail Outlets by States

With Number of Motor Vehicles per Outlet

Trade List Department, Chilton Company; as of January, 1955

		WHOLESALERS		DEALERS				REPAIR SHOPS		RETAIL OUTLETS	
STATE	Total Motor Vehicle Registrations	Number of Wholesalers	Motor Vehicles per Wholesaler	Passenger Car Dealers	Truck Dealers	Car and Truck Dealers	Motor Vehicles per Car and Truck Dealer	Independent Repair Shops	Motor Vehicles per Repair Shop	All Retail Stores	Motor Vehicles per Outlet
Alabama	855,099	156	3,340	552	429	597	1,432	723	1,182	1,320	648
Arizona	360,125	84	4,287	213	166	230	1,566	707	509	937	384
Arkansas	520,503	149	3,493	513	410	551	945	644	808	1,195	436
California	5,624,909	895	6,284	2,656	1,383	2,198	2,559	7,632	737	9,830	572
Colorado	663,000	105	6,314	460	328	480	1,381	942	704	1,422	466
Connecticut	865,059	110	7,864	526	336	577	1,499	1,148	754	1,725	501
Delaware	130,708	21	6,224	97	66	105	1,245	285	459	390	335
District of Columbia	190,280	23	8,277	80	49	86	2,214	244	780	330	577
Florida	1,410,840	225	6,270	652	427	706	1,998	2,111	668	2,817	501
Georgia	1,130,804	192	5,890	787	566	844	1,340	1,084	1,043	1,928	586
Idaho	309,636	74	4,185	335	279	372	832	464	667	836	370
Illinois	3,978,550	595	6,686	2,404	1,616	2,666	1,155	4,345	708	7,011	439
Indiana	1,667,800	259	6,439	1,303	898	1,411	1,182	2,052	813	3,463	482
Iowa	1,127,106	234	4,817	1,364	1,021	1,483	760	1,541	731	3,024	373
Kansas	1,000,033	172	5,815	1,019	755	1,114	898	1,095	913	2,209	453
Kentucky	932,620	169	5,560	753	556	797	1,179	883	1,064	1,680	559
Louisiana	875,547	136	6,438	533	404	573	1,528	548	1,598	1,121	781
Maine	404,524	84	5,639	349	268	373	816	588	518	961	317
Maryland	851,050	105	8,105	440	273	303	2,809	1,064	800	1,367	623
Massachusetts	1,471,165	215	6,843	1,103	653	1,357	1,084	1,783	825	3,140	468
Michigan	2,838,427	336	8,448	1,674	1,031	1,764	1,609	3,429	828	5,203	546
Minnesota	1,276,269	174	7,335	1,480	1,013	1,587	804	1,929	662	3,516	363
Mississippi	573,850	115	4,990	587	442	648	886	324	1,771	972	590
Missouri	1,397,800	272	5,139	1,157	818	1,244	1,124	1,762	793	3,006	465
Montana	307,285	64	4,800	464	361	461	666	457	673	914	336
Nebraska	638,053	128	4,922	740	579	801	796	914	689	1,715	367
Nevada	111,869	22	5,090	98	77	107	1,046	162	691	269	416
New Hampshire	193,098	37	7,152	237	162	247	781	312	619	558	346
New Jersey	1,875,897	243	7,726	1,079	628	1,169	1,605	3,178	590	4,347	431
New Mexico	304,140	78	3,899	224	178	242	1,257	555	548	797	382
New York	4,182,996	553	7,564	2,678	1,692	2,888	1,448	7,567	553	10,455	400
North Carolina	1,276,741	236	5,410	966	644	1,031	1,238	1,304	979	2,335	547
North Dakota	296,664	55	5,394	503	435	563	527	375	791	938	316
Ohio	3,283,066	466	7,045	2,149	1,365	2,290	1,434	3,721	882	6,011	546
Oklahoma	910,785	224	4,244	843	616	902	1,054	1,058	898	1,960	485
Oregon	778,110	181	4,299	594	374	540	1,441	1,261	617	1,801	432
Pennsylvania	3,504,369	582	6,021	2,893	1,761	3,106	1,128	6,800	515	9,906	354
Rhode Island	290,405	40	7,260	192	107	200	2,452	555	523	755	385
South Carolina	574,504	99	6,813	444	307	464	1,454	546	1,235	1,010	668
South Dakota	309,767	55	5,632	478	405	531	583	429	722	960	323
Tennessee	1,060,300	180	5,891	698	484	748	1,417	1,006	1,054	1,754	604
Texas	3,457,736	611	5,659	2,428	1,705	2,643	1,308	3,905	885	6,548	1,528
Utah	300,761	81	3,713	223	174	244	1,233	546	551	790	381
Vermont	129,325	24	5,388	183	124	191	677	256	505	447	289
Virginia	1,137,392	154	7,386	914	589	969	1,174	1,186	959	2,155	528
Washington	1,061,245	222	4,780	699	506	757	1,402	1,998	531	2,755	385
West Virginia	506,100	109	4,642	555	387	593	853	743	681	1,336	379
Wisconsin	1,347,546	196	6,875	1,547	1,192	1,721	783	1,588	848	3,309	407
Wyoming	152,278	36	4,535	216	162	239	710	126	1,296	356	459
Total	57,595,376	9,446	6,097	42,340	29,189	45,704	1,260	77,881	740	123,585	682

U. S. Motor Vehicle Registrations, 1900-1954

These data do not include publicly owned vehicles of which there were approximately 687,000 in 1953

Year	PASSENGER CARS			TRUCKS AND BUSES			TOTAL VEHICLES	
	Units	Per Cent of Total	Per Cent Increase	Units	Per Cent of Total	Per Cent Increase	Units	Per Cent Increase
1900	8,000	....	150	.....	....	....	8,000	150
1901	14,800	....	85	.....	....	....	14,800	85
1902	23,000	....	55	.....	....	....	23,000	55
1903	32,920	....	43	.....	....	....	32,920	43
1904	54,590	98.7	66	700	1.3	100	55,290	68
1905	77,400	98.2	42	1,400	1.8	100	78,800	43
1906	105,900	98.0	37	2,200	2.0	57	108,100	37
1907	140,300	98.0	33	2,900	2.0	32	143,200	32
1908	194,400	98.0	38	4,000	2.0	38	198,400	38
1909	305,950	98.1	57	6,050	1.9	51	312,000	57
1910	458,377	97.8	50	10,123	2.2	65	468,500	50
1911	618,727	96.8	35	20,773	3.2	105	639,500	36
1912	901,596	95.5	46	42,404	4.5	104	944,000	48
1913	1,190,393	94.6	32	67,667	5.4	60	1,258,060	33
1914	1,664,003	94.4	36	99,015	5.6	46	1,763,018	40
1915	2,332,426	93.6	42	158,506	6.4	60	2,490,932	41
1916	3,367,889	93.1	43	250,048	6.9	58	3,617,937	45
1917	4,727,468	92.4	42	391,057	7.6	56	5,118,525	41
1918	5,554,952	90.2	21	605,496	9.8	55	6,160,448	20
1919	6,679,133	88.2	21	897,755	11.8	48	7,576,888	23
1920	8,131,522	88.0	22	1,107,639	12.0	23	9,239,161	22
1921	9,212,158	87.8	14	1,281,508	12.2	16	10,493,666	11
1922	10,704,076	87.2	16	1,569,523	12.8	22	12,273,599	17
1923	13,253,019	87.8	24	1,849,086	12.2	18	15,102,105	23
1924	15,436,102	87.6	15	2,176,838	12.4	18	17,612,940	17
1925	17,439,701	87.5	13	2,501,023	12.5	15	19,940,724	13
1926	19,220,895	87.3	10	2,831,674	12.7	13	22,052,559	11
1927	20,142,120	87.2	5	2,997,439	12.8	6	23,139,559	5
1928	21,308,159	87.1	6	3,203,524	12.9	7	24,511,683	6
1929	23,060,421	87.1	8	3,442,087	12.9	7	26,502,508	8
1930	22,972,745	86.7	—0.4	3,559,254	13.3	3.4	26,531,999	0.1
1931	22,420,629	86.3	—2.4	3,573,267	13.7	0.4	25,993,896	—2.0
1932	20,994,092	86.2	—6.4	3,347,730	13.8	—6.3	24,341,822	—6.4
1933	20,557,493	86.2	—2.1	3,292,439	13.8	—1.7	23,849,932	—2.0
1934	21,535,199	86.6	4.7	3,346,268	13.4	1.6	24,881,467	4.3
1935	22,513,715	86.1	4.5	3,644,997	13.9	8.9	26,158,712	5.1
1936	24,044,432	85.6	6.8	4,047,277	14.4	11.0	28,091,709	7.4
1937	25,356,786	85.5	5.5	4,292,484	14.5	6.1	29,649,270	5.5
1938	25,264,589	85.5	—0.4	4,283,396	14.5	—0.2	29,547,984	—0.3
1939	26,147,798	85.3	3.5	4,496,770	14.7	5.0	30,644,568	3.7
1940	27,240,475	85.3	4.2	4,683,376	14.7	4.1	31,923,851	4.2
1941	29,240,417	85.6	7.3	4,911,990	14.4	4.9	34,152,407	7.0
1942	27,683,529	85.4	—5.3	4,741,298	14.6	—3.5	32,424,827	—5.1
1943	25,841,215	84.7	—6.7	4,657,882	15.3	—1.8	30,499,097	—6.0
1944	25,298,639	84.6	—2.1	4,611,966	15.4	—1.0	29,910,605	—1.9
1945	25,398,824	83.5	0.4	5,025,233	16.5	9.0	30,424,057	1.7
1946	27,834,543	83.6	9.6	5,858,813	17.4	16.6	33,693,356	10.7
1947	30,482,007	81.8	9.6	6,754,256	18.2	15.4	37,236,263	10.6
1948	33,011,780	81.5	8.3	7,490,342	18.5	11.0	40,502,122	8.9
1949	36,235,930	82.3	9.8	7,770,852	17.7	3.7	44,006,782	8.6
1950	39,952,969	82.8	10.2	8,318,721	17.2	7.0	48,271,690	9.7
1951	42,123,278	82.7	5.4	8,834,741	17.3	6.2	50,958,019	5.6
1952	43,323,355	82.6	2.8	9,131,021	17.4	3.4	52,454,376	2.9
1953	46,251,460	83.2	6.8	9,343,274	16.8	2.3	55,594,734	6.0
1954	48,016,725	83.4	3.8	9,578,651	16.6	2.5	57,595,376	3.6

— Denotes decrease. Sources: Public Roads Administration through 1930; 1931 to 1954 Automotive Industries count.

Total U. S. Motor Vehicle Registrations by Regions, 1951-1954

Zone	Region	1954 Units	1954 % of Total	1953 Units	1953 % of Total	1952 Units	1952 % of Total	1951 Units	1951 % of Total	Per Cent Increase 1954 over 1953	Per Cent Increase 1954 over 1950
1	New England	3,253,567	5.65	3,081,960	5.54	2,973,610	5.64	2,888,066	5.66	5.57	17.83
2	Middle Atlantic	9,562,302	16.61	9,431,901	16.97	9,010,823	17.13	8,667,490	17.01	1.39	14.01
3	South Atlantic	7,308,530	12.69	6,994,961	12.56	6,574,993	12.54	6,241,961	12.24	4.63	26.12
4	East North Central	12,215,323	21.21	11,732,579	21.10	11,085,740	21.13	10,944,790	21.49	4.12	18.37
5	East South Central	3,428,869	5.95	3,254,395	5.85	3,009,212	5.74	2,870,871	5.65	5.36	29.65
6	West North Central	6,022,011	10.47	5,915,758	10.64	5,698,656	10.86	5,676,876	11.14	1.80	10.94
7	West South Central	5,804,491	10.08	5,565,118	10.01	5,272,387	10.07	5,192,382	10.19	4.30	18.48
8	Mountain	2,520,164	4.38	2,425,613	4.36	2,271,456	4.33	2,145,224	4.20	3.90	24.00
9	Pacific	7,463,364	12.96	7,202,449	12.96	6,558,199	12.51	6,330,359	12.42	3.62	24.32
	Total—United States	57,595,376	100.00	55,594,734	100.00	52,454,376	100.00	50,958,019	100.00	3.60	19.31

States comprising the various regions are: Zone 1: Conn., Me., Mass., N. H., R. I., Vt.—Zone 2: N. J., N. Y., Pa.—Zone 3: Del., D. of C., Fla., Ga., Md., N. C., S. C., Va., W. Va.—Zone 4: Ill., Ind., Mich., Ohio, Wis.—Zone 5: Ala., Ky., Miss., Tenn.—Zone 6: Iowa, Kan., Minn., Mo., N. D., S. D.—Zone 7: Ark., La., Okla., Tex.—Zone 8: Ariz., Colo., Ida., Mont, Nev., N. M., Utah, Wyo.,—Zone 9: Cal., Ore., Wash.

Total U. S. Motor Vehicle Registrations by States—1954-1953

These data do not include publicly owned vehicles of which there were approximately 687,000 in 1953

As of the End of the Registration Year

State	Passenger Cars[1] 1954	Passenger Cars[1] 1953	Trucks 1954	Trucks 1953	Buses 1954	Buses 1953	Total Motor Vehicles 1954	Total Motor Vehicles 1953	Per Cent of Total 1954	Per Cent of Total 1953
Alabama	667,079	620,067	166,453	170,753	1,567	1,590	855,099	792,410	1.48	1.42
Arizona	278,225	272,119	81,900	78,457	900	893	360,125	351,469	.63	.63
Arkansas	363,027	349,399	154,845	167,627	2,691	3,757	520,563	520,783	.90	.94
California	4,948,516	4,779,664	475,493	640,679	[2]	[2]	5,424,009	5,420,343	9.76	9.75
Colorado	518,000	498,193	145,000	145,352	[2]	[2]	663,000	643,545	1.15	1.16
Connecticut	760,000	691,269	102,000	94,112	3,050	2,943	865,050	788,324	1.50	1.42
Delaware	104,746	100,502	25,962	23,919	[2]	[2]	130,708	124,421	.23	.22
District of Columbia	169,800	185,841	18,600	19,478	1,980	2,176	190,380	207,495	.33	.37
Florida	1,189,158	1,054,534	218,529	205,668	3,162	5,497	1,410,840	1,295,699	2.45	2.33
Georgia	892,894	846,946	221,496	215,341	6,414	6,243	1,130,804	1,068,530	1.96	1.92
Idaho	224,141	218,292	85,081	70,161	464[3]	[3]	309,686	288,453	.54	.52
Illinois	2,688,944	2,576,246	389,606	363,963	[2]	9,889	3,078,550	2,950,098	5.35	5.31
Indiana	1,380,000	1,332,162	280,000	270,162	7,800	7,668	1,667,800	1,609,992	2.90	2.90
Iowa	922,031	908,836	205,075	200,145	[2]	[2]	1,127,106	1,108,981	1.96	1.99
Kansas	758,523	724,464	241,575	231,590	[2]	[2]	1,000,098	956,054	1.74	1.72
Kentucky	740,000	706,714	198,000	188,697	1,620	[2]	939,620	895,411	1.63	1.61
Louisiana	684,944	635,899	186,452	178,469	4,151	4,104	875,547	818,472	1.52	1.47
Maine	238,793	229,512	65,355	71,775	376	632	304,524	292,920	.53	.53
Maryland	729,400	687,376	117,000	103,792	4,650	4,495	851,050	795,663	1.48	1.43
Massachusetts	1,291,329	1,239,196	174,378	168,595	5,458	5,042	1,471,165	1,413,233	2.55	2.54
Michigan	2,474,907	2,407,801	363,520	340,618	[2]	[2]	2,838,427	2,748,419	4.93	4.94
Minnesota	1,050,647	1,040,922	221,333	215,430	4,289	4,171	1,276,269	1,260,523	2.22	2.27
Mississippi	380,977	362,747	186,723	171,792	6,150	1,968	573,850	536,507	1.00	.97
Missouri	1,112,000	1,098,649	281,730	272,746	4,500	3,760	1,397,800	1,375,155	2.43	2.47
Montana	211,507	203,470	95,698	92,438	[2]	[2]	307,205	295,908	.53	.53
Nebraska	483,295	480,802	145,806	143,499	952	545	630,053	624,846	1.09	1.12
Nevada	86,760	80,099	25,269	23,486	[2]	[2]	111,969	103,585	.19	.19
New Hampshire	158,688	153,991	34,410	34,009	[2]	[2]	193,098	188,000	.34	.34
New Jersey	1,644,465	1,585,322	221,961	219,139	9,571	10,085	1,875,997	1,814,546	3.26	3.26
New Mexico	226,500	219,440	76,500	76,700	1,140	1,128	304,140	297,268	.53	.53
New York	3,717,920	3,659,210	453,559	476,764	11,517	16,859[3]	4,182,996	4,152,833	7.26	7.47
North Carolina	1,027,623	987,542	247,403	241,488	1,735	8,700	1,276,761	1,237,730	2.22	2.23
North Dakota	202,525	197,224	94,071	90,165	68	41	296,664	287,430	.52	.52
Ohio	2,900,000	2,758,996	383,000	373,179	[2]	[2]	3,283,000	3,132,175	5.70	5.63
Oklahoma	709,137	683,560	240,112	231,118	1,456	1,558	950,705	916,236	1.65	1.65
Oregon	692,097	663,056	84,693	89,660	1,320	1,630	778,110	754,426	1.35	1.36
Pennsylvania	2,981,709	2,915,296	510,000	536,530	12,600	12,696	3,504,309	3,464,522	6.08	6.24
Rhode Island	255,473	236,195	34,224	34,210	693	661	290,495	271,066	.50	.49
South Carolina	542,452	544,070	119,064	127,534	5,967	[3]	674,504	671,604	1.17	1.21
South Dakota	228,071	222,727	81,411	79,766	285	276	309,767	302,769	.54	.54
Tennessee	845,000	820,560	213,500	207,681	1,800	1,806	1,060,300	1,029,967	1.84	1.85
Texas	2,739,261	2,617,848	713,872	686,795	4,603	4,984	3,457,736	3,309,627	6.01	5.95
Utah	242,947	232,301	57,380	52,676	434	821	300,761	285,798	.52	.51
Vermont	114,536	113,251	14,669	15,040	120	126	129,325	128,417	.22	.23
Virginia	936,919	880,395	198,046	191,520	2,427	2,535	1,137,392	1,074,450	1.97	1.93
Washington	874,381	847,121	184,771	178,567	1,893	1,992	1,061,245	1,027,680	1.84	1.85
West Virginia	395,000	389,497	110,000	115,689	1,100	1,183	506,100	509,369	.88	.92
Wisconsin	1,090,687	1,057,452	253,529	231,638	3,321	2,895	1,347,546	1,291,895	2.34	2.32
Wyoming	114,460	112,255	48,818	47,132	[2]	[2]	163,278	159,387	.28	.29
Total	48,016,725	46,251,460	9,456,482	9,208,864	122,169	134,410	57,595,376	55,594,734	100.00	100.00

[1] Includes taxicabs. [2] Included with trucks. [3] Included with passenger cars.

Note: In the above tabulation we have endeavored to make as accurate a count as existing conditions permit. This census is compiled from material secured direct from the state motor vehicle commissioners. Wherever possible, duplications occasioned by transfers and non-resident registrations have been eliminated. Data are for the registration year, even though this necessitates partial estimates, in the case of those states whose registration year ends February or March of the following year.

Estimated Scrappage of Motor Vehicles

Year	Passenger Cars	Trucks	Total Motor Vehicles	Year	Passenger Cars	Trucks	Total Motor Vehicles	Year	Passenger Cars	Trucks	Total Motor Vehicles
1931	2,460,257	299,871	2,760,128	1939	1,770,168	273,373	2,043,541	1947	519,767	+16,311	503,456
1932	2,522,936	405,950	2,928,886	1940	2,323,228	372,544	2,695,772	1948	961,179	320,718	1,281,897
1933	2,380,393	301,160	2,681,553	1941	1,731,224	412,083	2,143,307	1949	1,614,192	658,821	2,273,013
1934	910,851	350,057	1,260,908	1942†	1,861,579	248,114	2,109,693	1950	2,609,399	727,314	3,336,610
1935	1,765,392	211,954	1,977,346	1943†	2,048,119	145,885	2,194,004	1951	2,890,594	487,830	3,378,424
1936	1,873,780	209,364	2,083,144	1944†	608,306	167,185	775,491	1952	2,958,317	515,312	3,473,629
1937	2,171,398	373,042	2,544,440	1945†	+62,306	+25,325	+90,643	1953	2,810,884	718,059	3,528,943
1938	1,983,218	374,438	2,357,656	1946†	+620,523	+208,331	+828,854	1954	3,770,199	592,714	4,363,913

†—The actual computations for the years 1942 through 1946 give unrealistic scrappage estimates for these years because of the cars and trucks being placed in storage during 1942 and then being returned to service at the end of the war.

+—Indicates the increase in number of registrations over the number of new vehicles sold.

FORMULA—Scrappage was estimated by adding new car and truck registrations to the total number of vehicles registered in a given year (1952 for example). This sum represents what would have been total registrations at the end of that year (1953) provided there was no scrappage during the year. From this total we subtracted the number of vehicles registered during the year (1953). The difference represents our estimate of the number of vehicles which were either scrapped or taken out of service during 1953.

Ranking of the States According to 1954 Total Registrations

Rank	State	Units	% of Total	Rank	State	Units	% of Total	Rank	State	Units	% of Total
1	California	5,624,009	9.76	18	Georgia	1,130,804	1.96	35	Arizona	360,125	.63
2	New York	4,182,936	7.26	19	Washington	1,061,245	1.84	36	South Dakota	309,767	.54
3	Pennsylvania	3,504,309	6.08	20	Tennessee	1,060,300	1.84	37	Idaho	309,656	.54
4	Texas	3,457,736	6.01	21	Kansas	1,000,698	1.74	38	Montana	307,705	.53
5	Ohio	3,282,000	5.70	22	Oklahoma	950,705	1.65	39	Maine	304,524	.53
6	Illinois	3,078,550	5.35	23	Kentucky	939,620	1.63	40	New Mexico	304,140	.53
7	Michigan	2,838,427	4.93	24	Louisiana	875,547	1.52	41	Utah	300,761	.52
8	New Jersey	1,875,997	3.26	25	Connecticut	865,950	1.50	42	North Dakota	296,664	.52
9	Indiana	1,667,800	2.90	26	Alabama	855,999	1.48	43	Rhode Island	290,405	.50
10	Massachusetts	1,471,165	2.55	27	Maryland	851,050	1.48	44	New Hampshire	193,098	.34
11	Florida	1,410,840	2.45	28	Oregon	778,110	1.35	45	Dist. of Columbia	190,380	.32
12	Missouri	1,397,800	2.43	29	South Carolina	674,504	1.17	46	Wyoming	163,278	.28
13	Wisconsin	1,347,546	2.34	30	Colorado	662,000	1.15	47	Delaware	130,708	.23
14	North Carolina	1,276,761	2.22	31	Nebraska	630,053	1.09	48	Vermont	129,325	.22
15	Minnesota	1,276,269	2.22	32	Mississippi	573,850	1.00	49	Nevada	111,963	.19
16	Virginia	1,137,392	1.97	33	Arkansas	520,503	.90				
17	Iowa	1,127,106	1.96	34	West Virginia	506,100	.88		Total	57,595,376	100.00

Taxicab, Motorcycle and Trailer Registrations, by States

State	Taxicabs* 1954	Taxicabs* 1953	Taxicabs* 1952	Motorcycles 1954	Motorcycles 1953	Motorcycles 1952	1954 Trailers and Semi-Trailers: Tourist	Commercial	Total
Alabama	2,572	2,766	2,869	6,427	6,840	7,005	....	....	15,123
Arizona	225	219	196	3,500	3,405	3,474	20,000	17,000	37,000
Arkansas	639	758	802	2,209	2,211	1,969	....	....	23,631
California	†	†	†	49,683	50,727	50,737	....	....	445,572
Colorado	*	*	*	4,280	4,157	4,320	....	....	34,000
Connecticut	1,229	1,208	1,175	3,852	3,577	3,388	19,635	9,943	29,578
Delaware	*	*	*	511	519	504	....	....	6,654
Dist. of Columbia	10,437	11,382	11,342	425	516	595	....	....	17,810
Florida	17,628	15,087	14,231	16,506	16,280	16,227	93,147	31,029	124,176
Georgia	*	*	*	7,392	7,226	7,884	....	....	41,146
Idaho	464	84	159	1,981	2,137	2,119	4,065	34,634	38,762
Illinois	8,691	8,813	9,137	22,868	23,030	24,012	....	....	80,181
Indiana	*	*	*	18,000	18,304	18,206	7,000	125,000	132,000
Iowa	*	*	*	9,152	9,740	10,290	....	....	111,914
Kansas	*	*	*	8,289	8,266	8,198	....	....	17,721
Kentucky	2,091	2,195	*	4,560	5,737	6,064	....	....	....
Louisiana	3,122	3,411	3,300	5,372	5,041	5,000	2,660	42,566	45,226
Maine	1,051	1,075	1,085	1,493	1,849	2,115	....	....	25,688
Maryland	2,538	2,604	2,727	4,675	5,266	5,500	....	21,419	21,419
Massachusetts	*	*	*	4,457	4,282	4,506	....	....	78,557
Michigan	†	†	†	18,677	19,562	18,747	17,569	265,555	283,124
Minnesota	*	*	*	9,576	9,945	9,993	75,347	35,686	111,033
Mississippi	919	1,016	987	2,452	2,615	2,296	25,859	8,140	33,999
Missouri	*	*	*	6,800	6,736	6,536	....	....	82,000
Montana	*	*	*	1,153	1,070	988	10,883	224	11,108
Nebraska	456	459	479	4,012	3,910	4,371	3,366	10,674	14,040
Nevada	*	*	*	1,310	1,124	901	....	....	8,750
New Hampshire	*	*	*	1,533	1,645	1,713	....	....	13,041
New Jersey	‡	‡	‡	8,672	9,013	8,893	....	....	36,338
New Mexico	830	1,158	1,080	2,691	3,147	2,878	....	....	10,165
New York	24,228	23,844	25,064	18,651	18,278	23,263	160,697	126,886	286,493
North Carolina	3,902	4,250	4,511	7,730	8,342	9,271	....	....	87,951
North Dakota	*	*	*	902	896	918	1,142	355	1,497
Ohio	*	*	*	24,930	25,701	23,947	....	....	203,817
Oklahoma	1,725	2,196	2,123	8,302	7,540	6,805	2,599	13,375	15,974
Oregon	*	*	*	5,529	5,440	5,832	....	....	*†
Pennsylvania	4,300	‡	‡	28,532	23,849	25,562	....	....	103,898
Rhode Island	321	1,158	339	1,627	1,653	1,772	*	10,964	10,964
South Carolina	2,107	2,531	2,579	4,950	5,141	5,542	2,994	9,162	12,156
South Dakota	*	*	*	1,554	1,548	1,648	3,322	24,581	27,903
Tennessee	5,250	5,500	5,112	6,500	6,236	6,736	....	8,000	8,000
Texas	*	*	*	27,506	28,218	28,497	21,838	159,727	181,566
Utah	*	*	*	1,332	1,328	1,374	1,769	2,377	4,146
Vermont	*	*	*	768	754	754	....	....	7,739
Virginia	4,607	4,987	5,135	9,639	9,326	10,459	30,980	14,861	45,841
Washington	1,402	1,599	1,599	6,759	5,541	5,555	3,823	65,047	68,870
West Virginia	798	957	1,006	2,231	2,058	2,356	7,559	1,176	8,735
Wisconsin	*	*	*	8,914	9,147	8,990	6,490	14,700	21,190
Wyoming	*	*	*	842	896	969	....	15,998	15,998
Total	101,632	99,251	97,807	394,773	401,583	410,469	....	....	3,061,453

*—Included with passenger cars. †—Included with trucks. ‡—Includes with buses. §—Taxicab registrations which were included in Passenger Cars in table of U. S. Motor Vehicle Registrations by States.

World Registrations by Continental Divisions

1953 Revised data. Latest available at time of going to press

Courtesy of The American Automobile (Overseas Edition) and El Automovil Americano

THE AMERICAS

Countries	Total Cars, Trucks, Buses	*Cars	*Trucks	*Buses	Motor-cycles
Alaska	51,350	35,851	15,529	†	309
Antigua	872	745	107	20	65
Argentina	416,126	256,806	143,935	15,385	21,000
Bahamas	3,753	2,857	858	8	238
Barbados	5,567	4,161	1,045	156	356
Bermuda	3,946[1]	3,139	642	62	4,175
Bolivia	21,242	5,871	14,617	754	536
Brazil	648,966	387,538	289,261	23,166	19,316
British Guiana	8,763	7,390	1,298	75	860
British Honduras	597	325	268	2	120
Canada	3,391,663	2,513,128	866,503	15,000	46,194
Chile	86,858	46,455	36,032	4,326	1,585
Columbia	10,550	47,700	42,450	10,400	1,280
Costa Rica	9,859	5,400	3,400	859	475
Cuba	146,458	103,772	37,916	4,770	16,312
Dominica	339[1]	138	160	9	76
Dominican Rep.	15,100	8,500	6,000	600	800
Dutch Guiana	2,560	1,600	825	135	450
Ecuador	17,800	5,500	10,000	2,300	200
Falkland Islands	162	91	71	0	69
French Guiana	481	302	163	15	39
Grand Cayman Is.	126	102	24	..	2
Greenland	101	1	99	1	..
Grenada	1,115	829	162	124	149
Gaudeloupe	6,800	3,900	1,900	1,000	575
Guatemala	17,875[1]	10,900	5,275	†	1,800
Haiti	7,492	5,220	1,923	349	327
Honduras	4,782	1,679	3,022	81	190
Jamaica	18,371	12,900	4,609	862	360
Martinique	8,776	5,011	2,065	700	823
Mexico	438,250[1]	244,250	162,209	29,444	8,500
Montserrat (Le Is.)	134	114	13	7	8
Netherlands W.I.	13,160	9,625	3,050	485	300
Nicaragua	4,785	2,776	1,738	271	328
Panama	14,487	10,816	3,671	†	239
Canal Zone	14,905	13,613	771	121	385
Paraguay	5,160	2,270	2,440	450	105
Peru	82,135	45,704	32,842	3,589	500
Puerto Rico	84,340[1]	58,382	23,269	806	2,410
St. Kitts-Nevis	291	198	93	..	..
St. Lucia	691	371	144	86	56
St. Pierre-Miquelon	121	58	63	0	6
St. Vincent	320	250	70	†	..
El Salvador	12,380	7,150	4,400	830	400
Trinidad-Tobago	20,665	15,471	4,976	218	672
United States	55,594,734	46,251,460	9,208,864	134,410	400,116
Uruguay	89,700	48,100	39,630	1,970	3,000
Venezuela	177,718	109,093	59,925	4,590	5,395
Virgin Islands	2,492	1,722	755	15	37
Total—1953	61,549,394	50,249,256	11,039,466	249,437	539,132
Total—1953 (Excluding U. S.)	5,954,660	3,997,796	1,830,602	115,027	139,016

*Details not available for all territories; therefore sum of Cars, Trucks and Buses does not always equal "Total." †Included with Trucks. [1] Total includes certain unclassified vehicles and therefore is larger than sum of Cars, Trucks and Buses in this country.

AFRICA

Countries	Total Cars, Trucks, Buses	*Cars	*Trucks	*Buses	Motor-cycles
Algeria	101,556	57,108	37,684	1,266	7,006
Angola	12,853	8,331	4,522	†	2,196
Belgian Congo	36,631	16,682	19,739	290	2,508
British E. Africa	68,737	33,202	33,320	2,515	1,450
British Somaliland	900	100	800	†	..
British W. Africa	56,500	26,500	26,000	†	..
Canary Islands	9,650	5,100	3,400	550	500
Cape Verde Islands	140	93	47	†	23
Cyrenaica	425	..	..	..	..
Egypt	59,957	69,869	15,659	4,429	10,740
Eritrea	1,600	..	..	..	..
Ethiopa	9,505	5,400	4,000	105	500
French Cameroons	11,800	3,200	8,600	..	..
Fr. Equa. Africa	13,413	4,431	8,917	65	684
Fr. Somaliland	693	521	172	..	69
Fr. W. Africa	38,650	14,100	23,550	1,300	2,450
Italian Somaliland	3,910	950	2,925	35	310
Liberia	2,460	1,350	1,100	10	15
Libya	4,280	3,762	618	†	759
Madagascar	24,749	11,057	13,446	246	1,298
Madeira	2,102	1,640	462	†	92
Mauritius	7,118	5,869	1,827	222	397
Morocco	123,557	81,618	39,724	2,215	13,144
Mozambique	16,310	12,009	4,301	†	1,120
Nyasaland	5,233	2,915	2,241	77	632
Reunion Island	5,600	..	..	..	..
Rhodesia	87,000	57,900	28,490	610	4,860
St. Thomas-Principe	469	258	211	†	79
Seychelles Islands	250	196	54	†	25
Southwest Africa	14,273	7,741	6,528	4	306
Sudan	12,900	12,650	..	250	350
Tangier	6,725	5,800	850	75	275
Togoland	1,839	246	1,065	..	..
Tunisia	41,026	27,798	12,386	642	6,184
Union of S. Africa	709,161	542,740	152,399	5,622	27,183
Total	1,511,975	1,014,248	464,857	19,528	84,880

*Details not available for all territories; therefore sum of Cars, Trucks and Buses does not always equal "Total." †Included with Trucks.

EUROPE

Countries	Total Cars, Trucks, Buses	*Cars	*Trucks	*Buses	Motor-cycles
Albania[1]	2,000	600	1,400	†	..
Austria	130,942	74,221	53,031	3,690	203,819
Azores	1,927	1,589	418	†	240
Belgium	548,450	388,000	157,000	3,450	180,000
Bulgaria[1]	14,500	4,500	9,000	1,000	..
Czechoslovakia[1]	168,300	105,000	61,300	1,800	150,000
Denmark	246,549	158,349	84,789	3,366	66,562
Faroe Islands	462	157	293	12	109
Finland	117,100	62,000	50,800	4,300	46,700
France	2,976,000	1,832,000	1,109,750	28,250	1,098,000
W. Germany	1,492,900	1,043,200	429,800	19,800	1,738,700
Gibraltar	2,808	2,286	449	73	172
Great Britain	3,779,168	2,754,456	953,105	71,607	966,456
Greece	33,555	10,467	17,967	5,121	5,700
Holland	296,100	194,000	95,800	6,300	119,000
Hungary[1]	16,000	5,500	9,000	1,500	5,200
Iceland	11,161	4,748	6,113	302	290
Rep. of Ireland	149,191	114,493	33,474	1,224	11,275
Italy	919,500	614,000	290,000	15,500	1,230,000
Luxembourg	21,124	15,554	5,335	235	7,775
Malta	12,000	6,668	5,370	†	1,302
Monaco	1,900	..	..	..	..
No. Ireland	83,535	62,720	21,410	1,405	14,409
Norway	167,308	90,456	72,383	4,269	35,000
Poland[1]	76,000	29,000	46,000	1,000	28,000
Portugal	130,923	86,653	35,270	†	9,150
Rumania[1]	26,000	14,000	10,000	2,000	5,300
Spain	178,646	88,839	81,350	8,457	23,269
Sweden	542,000	428,000	105,600	8,400	300,000
Switzerland	265,495	221,500	41,675	2,320	173,790
U. S. S. R.[1]	2,600,000	225,000	2,350,000	25,000	..
Yugoslavia	27,517	8,411	17,770	1,336	11,500
Total	15,054,861	8,636,430	6,153,902	221,717	5,321,629

*Details not available for all territories; therefore sum of Cars, Trucks and Buses does not always equal "Total." †Included with Trucks. [1] Iron Curtain country; figure estimated.

ASIA

Countries	Total Cars, Trucks, Buses	*Cars	*Trucks	*Buses	Motor-cycles
Afghanistan	4,300	300	3,900	100	5
Arabia	28,935	1,030	17,905	†	100
Bahrein Islands	1,190	600	550	40	..
British No. Borneo	800	..	..	..	..
Burma	24,328	10,026	8,945	5,357	971
Ceylon	69,859	50,541	15,226	4,092	9,753
China[1]	80,000	5,000	69,000	6,000	..
Cyprus	10,687	6,433	4,254	†	2,412
Formosa (Taiwan)	20,250	5,500	12,800	2,050	1,600
French Indo-China[1]	43,000	30,500	12,500	†	..
Hong Kong	17,349	13,353	3,476	520	1,300
India	281,138	157,798	87,762	35,578	27,500
Indonesia, Rep. of	112,750	57,000	44,700	11,050	22,700
Iran	41,650	14,850	23,600	3,200	2,300
Iraq	20,050	12,750	7,000	300	500
Israel	32,990	13,000	16,250	1,740	9,900
Japan	613,937	103,760	482,909	26,968	38,178
Jordan	28,900	11,300	11,600	6,000	3,000
Korea, Rep. of[1]	14,500	1,500	13,000	†	..
Lebanon	29,801	16,615	3,306	880	950
Macao	315	265	50	†	..
Malaya, Fed. of	73,340	50,325	21,015	2,000	17,737
Pakistan	38,168	24,873	8,223	5,108	5,922
Philippine Rep.	112,665	50,455	54,026	8,184	1,681
Sarawak	1,694	874	475	345	1,043
Singapore	43,324	23,161	9,259	904	6,970
Syria	16,687	8,451	6,674	1,562	1,279
Thailand	30,210	15,800	13,600	810	1,500
Turkey	56,600	25,000	26,000	5,600	4,000
Total	1,840,517	723,024	979,005	128,388	162,302

*Details not available for all territories; therefore sum of Cars, Trucks and Buses does not always equal "Total." †Included with Trucks. [1] Iron Curtain country or war area; figures estimated.

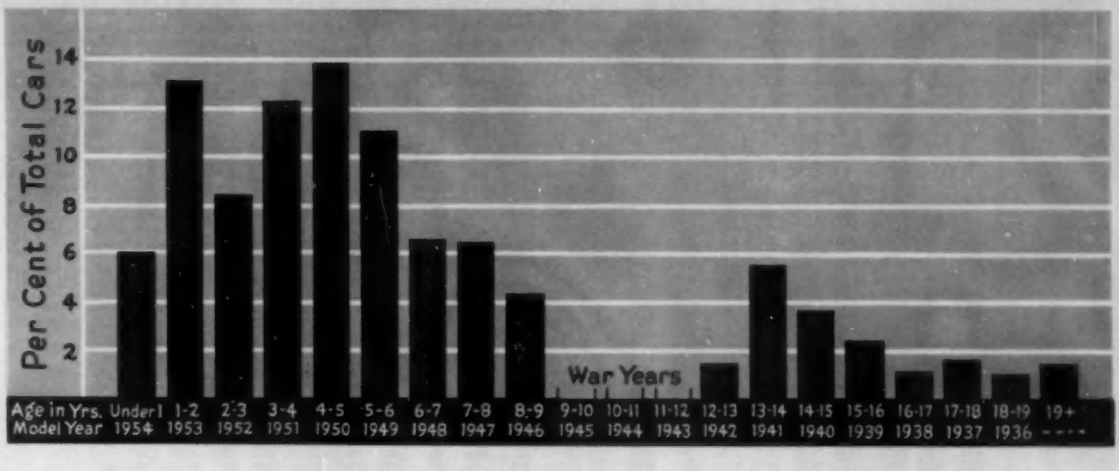
OCEANIA

Countries	Total Cars, Trucks, Buses	*Cars	*Trucks	*Buses	Motor-cycles
Australia	1,727,000	1,141,000	578,200	7,800	144,000
Cook Islands	184	77	107	0	76
Fiji Islands	3,400	1,875	1,175	350	150
Guam	8,900	7,725	1,150	25	172
Hawaii	167,384	139,814	26,860	710	2,531
New Caledonia	4,255	2,580	1,675	....	290
New Guinea-Papua	3,940	2,085	1,830	25	319
New Zealand	444,276	321,391	120,352	2,623	24,094
Ryuku Islands	2,650	700	1,670	280	588
Samoa	235	135	90	10	....
Society Islands	1,800	....	....	....	....
Timor Islands	284	106	178	†	69
Trust Territory	191	110	80	1	1
Other Oceania	2,500	....	....	....	....
Total	2,366,999	1,617,506	733,367	11,824	172,290

*Details not available for all territories; therefore sum of Cars, Trucks and Buses does not always equal "Total." †Included with Trucks.

• TOTAL REGISTRATIONS •

81% OF PASSENGER CARS ARE POST-WAR MODELS



Number and Per Cent of Cars in Use, by Age Groups*

Age in Years	1954 Units	1954 % of Total Simple	1954 % of Total Cumul.	1953 Units	1953 % of Total Simple	1953 % of Total Cumul.	1952 Units	1952 % of Total Simple	1952 % of Total Cumul.	1951 Units	1951 % of Total Simple	1951 % of Total Cumul.
Under 1	2,620,354	5.91	5.91	2,900,616	6.89	6.89	1,831,074	4.62	4.62	2,858,409	7.44	7.44
1-2	5,717,841	12.91	18.82	3,720,053	8.84	15.73	5,387,369	13.58	18.20	6,114,348	15.92	23.36
2-3	3,698,425	8.35	27.17	5,461,553	12.97	28.70	6,202,028	15.63	33.83	4,987,648	12.99	36.35
3-4	5,443,247	12.29	39.46	6,219,450	14.77	43.47	4,968,539	12.52	46.35	2,963,958	7.72	44.07
4-5	6,179,050	13.95	53.41	4,965,804	11.80	55.27	2,943,223	7.42	53.77	2,887,019	7.78	51.85
5-6	4,898,498	11.06	64.47	2,931,654	6.96	62.23	2,952,518	7.44	61.21	1,974,844	5.14	56.99
6-7	2,884,520	6.51	70.98	2,913,754	6.92	69.15	1,942,396	4.90	66.11	.....	....	....
7-8	2,821,467	6.37	77.35	1,903,101	4.52	73.67	....	....	....	....	....	....
8-9	1,822,273	4.11	81.46	....	....	....	....	....	....	....	....	....
9-10	....	....	....	....	....	....	....	....	....	966,193	2.52	59.51
10-11	....	....	....	....	....	....	891,522	2.25	68.36	2,760,692	9.79	69.30
11-12	....	....	....	798,847	1.90	75.57	3,456,934	8.71	77.07	2,793,906	7.27	76.57
12-13	640,824	1.45	82.91	3,095,153	7.35	82.92	2,495,524	6.29	83.36	1,995,737	5.20	81.77
13-14	2,461,832	5.56	88.47	2,189,599	5.20	88.12	1,687,147	4.25	87.61	1,243,675	3.24	85.01
14-15	1,691,402	3.82	92.29	1,396,271	3.32	91.44	972,974	2.45	90.06	2,126,403	5.54	90.55
15-16	1,015,210	2.29	94.58	752,028	1.79	93.23	1,540,530	3.88	93.94	1,492,890	3.89	94.44
16-17	516,939	1.17	95.75	1,130,339	2.69	95.92	995,778	2.51	96.45	687,973	1.79	96.23
17-18	746,447	1.68	97.43	698,101	1.66	97.58	439,499	1.09	97.54	1,451,334	3.77	....
18-19	444,275	1.00	98.43	294,396	.70	98.28	207,226	.52	98.06	....	....	....
19 and older	698,642	1.57	..	724,766	1.72	....	766,774	1.94	..	....	....	..
Total	44,301,346	100.00	100.00	42,005,385	100.00	100.00	39,671,155	100.00	100.00	38,405,309	100.00	100.00
Age not known	85,767	..	..	196,964	..	..	98,586	..	..	110,229	..	..
Total	44,387,113	....	....	42,202,349	....	....	39,769,741	....	....	38,515,538	....	....
Average age of known models	6.17 yrs.			6.51 yrs.			6.75 yrs.			7.04 yrs.		

*Based on data from Reuben H. Donnelley Corp. as of July 1 of each year.

Number and Per Cent of Trucks in Use, by Age Groups*

Age in Years	1954 Units	1954 % of Total Simple	1954 % of Total Cumul.	1953 Units	1953 % of Total Simple	1953 % of Total Cumul.	1952 Units	1952 % of Total Simple	1952 % of Total Cumul.	1951 Units	1951 % of Total Simple	1951 % of Total Cumul.
Under 1	408,850	4.67	4.67	440,866	5.11	5.11	366,700	4.39	4.39	511,222	6.38	6.38
1-2	842,041	9.61	14.28	791,329	9.17	14.28	995,740	11.94	16.30	1,091,802	13.63	20.01
2-3	786,008	8.97	23.25	986,754	11.44	25.72	1,102,081	13.22	29.55	944,752	11.80	31.81
3-4	966,514	11.03	34.28	1,078,431	12.50	38.22	935,084	11.21	40.75	971,056	12.13	43.94
4-5	1,055,119	12.04	46.32	906,053	10.50	48.72	953,949	11.43	52.18	787,053	9.82	53.77
5-6	880,347	10.04	56.36	918,715	10.65	59.37	762,089	9.13	61.32	717,101	8.95	62.72
6-7	856,072	9.88	66.24	722,543	8.38	67.75	691,537	8.29	69.61	558,258	1.98	64.70
7-8	664,221	7.58	73.82	651,553	7.55	75.30	148,180	1.78	71.39	70,012	.87	65.57
8-9	594,195	6.78	80.60	138,499	1.55	76.85	68,812	.77	72.16	24,428	.31	65.88
9-10	114,818	1.31	81.91	56,643	.66	77.51	23,037	.28	72.44	242,376	3.04	68.93
10-11	46,618	.53	82.44	21,169	.24	77.75	222,124	2.66	75.10	533,423	6.66	75.58
11-12	17,074	.19	82.63	192,213	2.23	79.98	475,918	5.70	80.80	381,843	4.77	80.35
12-13	168,562	1.92	84.55	415,142	4.81	84.79	335,983	4.03	84.82	265,620	3.57	83.92
13-14	249,884	2.99	88.54	288,875	3.25	88.14	246,627	2.94	87.77	199,547	2.49	86.41
14-15	238,384	2.72	91.26	208,594	2.42	90.56	167,156	2.00	89.77	205,483	2.81	90.22
15-16	158,497	1.92	93.18	138,792	1.61	92.17	249,710	2.99	92.76	252,774	3.16	93.38
16-17	108,335	1.24	94.42	202,061	2.35	94.52	199,759	2.39	95.19	144,376	1.80	95.18
17-18	154,414	1.76	96.18	158,761	1.84	96.36	111,471	1.34	96.40	385,706	4.82	....
18-19	116,749	1.33	97.51	88,127	1.02	97.38	79,835	.95	97.84	.....	....	....
19 and older	218,876	2.49	....	225,352	2.62	....	221,363	2.66	....	.....	....	....
Total	8,764,408	100.00	100.00	8,626,422	100.00	100.00	8,343,835	100.00	100.00	8,060,108	100.00	100.00
Age not known	36,000	..	..	66,151	..	..	76,020	....	....	56,775	....	....
Total in use	8,800,408	....	....	8,692,574	....	....	8,419,855	....	....	8,064,883	....	....
Average age of known models	6.58 yrs.			6.59 yrs.			6.80 yrs.			6.55 yrs.		

*Based on data from Reuben H. Donnelley Corp. as of July 1, of each year.

• TOTAL REGISTRATIONS •

• TOTAL REGISTRATIONS •

CARS IN USE BY MAKES,

Model	Yr.	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
BUICK	'54	2710	844	1109	18967	1670	3744	615	949	4870	3249	987	20281	8959	3840	2781	2476	2456	1040	2952	6881	20874	4730	1486	4488	999
	'53	6537	2442	2879	33940	3635	6734	1527	1902	11799	6349	2002	36700	12978	7068	6356	5428	6180	1774	6219	11930	34176	9865	3337	9827	1762
	'52	3410	1686	1886	23864	2621	4038	999	1206	7428	4967	1489	21900	8902	4468	4102	3369	3677	1076	3895	7341	18710	5734	2302	6046	1287
	'51	4557	2141	2233	32963	4051	6756	1230	1694	9062	6254	1825	29147	11466	6389	5476	4484	4622	1374	5192	10030	21083	7662	2833	7933	1677
	'50	8127	4269	3752	56370	7697	9766	1912	3109	16258	10061	3008	47299	18428	11029	9889	7603	8501	2640	8364	15834	31106	13224	4536	13559	2596
	'49	2816	1699	1399	36300	3231	5515	862	1641	7303	5482	1349	22366	8923	4963	3915	3737	3653	1389	4478	9056	12408	5353	1633	6641	1091
	'48	1635	1174	830	21666	2118	3629	563	1130	4544	2342	813	13226	5814	3067	2354	2445	1923	990	2731	6234	10160	3675	954	4388	673
	'47	2770	1339	992	23839	2465	4342	629	1203	6362	2568	930	14629	7040	3263	2727	2894	2261	1171	3271	7351	9702	3827	1236	5106	742
	'46	1356	814	543	13473	1309	2448	366	709	3856	1423	467	7665	3715	1894	1437	1638	1278	670	1835	4823	4818	2107	676	2722	390
	'45-'42	887	496	298	7974	873	1579	179	518	1918	582	271	2815	1166	672	617	769	567	238	881	1391	1257	913	350	1379	189
	'41	2370	1531	860	36344	2546	4455	694	726	4574	2205	1003	8008	5018	2870	2496	2162	2030	1136	2775	6845	5675	3714	1214	5644	698
	'40	1563	916	597	21599	1530	3791	466	867	3216	1496	629	6125	3316	2026	1562	1856	1155	1136	2258	6157	4059	2729	732	3940	477
	'39	898	478	332	10549	785	2285	244	295	1506	754	259	3060	1470	1152	953	1065	612	607	1208	3217	1825	1459	422	2294	269
	'38	364	364	182	7084	526	1453	144	196	882	426	187	1634	998	720	490	532	287	404	717	1605	994	987	168	1314	157
	'37	303	348	151	9188	710	1657	124	152	835	413	226	1863	1117	748	528	614	232	401	783	1921	1318	1006	186	1474	179
	'36	138	147	79	5037	330	773	74	82	384	165	89	841	606	358	246	286	77	229	314	944	446	458	87	565	110
	Before '36	90	109	26	3664	222	961	28	27	160	127	58	468	346	309	225	161	45	148	180	471	300	400	63	430	90
	Unid.*	25	12	9	253	9	25	27	36	434	273	9	603	74	43	35	59	68	2		23	448	28	45	26	1
	Total	36926	20700	16687	364324	36220	61837	10662	18991	82261	49221	18672	237000	98824	54653	43131	42712	39626	16416	47613	102307	180556	67880	22250	77749	13190
CADILLAC	'54	462	232	196	8675	469	961	150	283	1351	990	194	4104	1154	555	446	367	510	149	476	1257	6150	712	239	881	185
	'53	903	509	512	13064	884	1629	300	537	3000	1399	390	8041	2474	1139	1050	750	1156	270	1150	2372	7360	1348	544	1880	386
	'52	607	365	396	12984	908	1400	277	512	2394	1117	327	6024	2224	985	836	657	929	235	944	1841	4882	1134	406	1414	311
	'51	829	579	444	16347	990	1787	367	608	3675	1396	396	7235	2256	1026	855	756	1134	308	1083	2492	4437	1310	513	1809	354
	'50	773	670	370	19292	1043	1726	381	682	3786	1137	317	6397	1903	964	790	745	1077	345	1043	2562	3218	1234	471	1606	295
	'49	736	601	323	18161	966	1886	263	561	3796	1137	317	5418	1788	825	707	740	1035	339	942	2508	2666	1140	377	1522	269
	'48	387	323	145	6366	463	1230	126	306	2166	611	141	3314	1091	494	392	383	475	166	542	1508	1546	567	163	784	105
	'47	433	407	166	8234	383	1399	141	462	2296	698	129	3471	1234	499	392	495	479	245	637	1698	1754	656	172	952	97
	'46	210	182	63	4062	242	729	76	184	1058	375	49	1886	634	181	196	234	231	108	292	845	667	362	71	397	42
	'45-'42	148	89	48	2136	148	312	33	87	429	158	27	558	204	88	98	138	131	61	119	400	301	144	49	224	20
	'41	494	426	145	9841	537	1381	194	226	1733	593	166	1926	821	323	264	463	406	257	542	1906	1026	800	163	1006	92
	'40	168	167	48	3865	215	648	67	121	960	201	29	792	341	131	86	207	132	153	261	948	453	290	67	482	42
	'39	130	136	29	2942	152	610	89	83	422	168	31	492	186	121	74	140	81	101	184	623	325	231	43	304	31
	'38	53	49	19	1899	88	235	17	36	225	86	16	206	90	55	62	48	43	45	79	336	134	86	13	151	18
	'37	63	61	19	2166	116	379	35	29	196	61	24	215	117	85	86	73	30	53	104	466	156	124	22	174	18
	'36	13	23	7	991	44	89	11	7	55	22	9	61	37	31	19	26	7	18	22	112	46	48	6	62	9
	Before '36	7	31	4	961	37	130	7	9	28	23	7	84	32	33	29	18	19	23	30	193	48	57	10	61	10
	Unid.*	2	2	1	93	2	4	0	7	160	63	4	112	7	7	3	13	6			4	97	4	0	6	
	Total	5586	3295	2924	127735	7737	16343	2342	4731	29649	9638	2579	50396	18490	7243	6091	6289	7879	2877	8441	22899	34277	10067	3384	13630	2284
CHEVROLET	'54	12481	2587	4097	49025	5458	9290	2050	1485	10486	14075	1913	51513	17981	12537	9328	9427	13733	3472	9237	19656	44903	14385	6567	19872	2549
	'53	21702	6338	11181	91327	11244	17064	5311	4433	30661	27240	5024	94499	40456	25177	18962	18274	23984	6028	19172	31895	92853	28722	12192	34166	5091
	'52	12751	4449	7838	61288	7218	10379	3318	4385	18023	15868	3383	49452	24276	15009	12765	11932	14258	3831	11892	19613	49870	17507	6377	21334	3865
	'51	19230	6670	10337	93652	11534	16541	4961	5867	25233	23163	4953	69465	36337	24062	19484	18475	19016	5590	16834	30364	67425	26100	11052	33665	5629
	'50	22998	7746	11706	94918	14218	18140	4106	5226	29812	26016	6742	72937	41029	26787	22448	21363	22308	5810	16447	31461	68179	28506	11737	37262	6959
	'49	17724	6027	8776	84916	11013	13263	2922	3738	20101	19662	4787	63316	32518	21962	17764	17916	18566	4785	14472	24065	45748	21904	9033	30077	4475
	'48	14163	3606	6641	64385	8079	9998	1853	2955	12386	12990	2951	36305	21815	15626	13001	12999	10367	3485	10356	16420	29498	16100	6985	22653	2958
	'47	13122	3670	5903	49727	8147	8174	1529	1829	11960	12444	2953	31017	19986	15136	12409	12590	9516	3225	9375	14863	24872	15147	6400	20497	2792
	'46	8068	2165	3636	31633	4467	5044	988	773	6706	7534	1629	17268	11510	8214	7192	7793	5426	2025	5737	8617	13475	8981	3831	11985	1588
	'45-'42	4067	1347	1842	18164	2386	2110	459	226	3349	3873	994	9138	4720	4306	3725	4204	2580	978	2086	3983	5074	4092	2075	6226	755
	'41	16706	4974	7513	81238	9364	10148	1442	943	12906	14645	3802	23758	19027	16631	10052	10227	8971	4067	3664	17112	18876	10873	7200	27894	3017
	'40	10184	3123	5012	62325	6623	7569	901	586	8776	10127	2661	16824	13167	11937	9781	11831	5799	3201	7276	12463	13606	13423	4889	21886	2112
	'39	6603	2073	3561	32857	4348	4690	669	302	4974	6566	1638	10399	7367	6242	6903	7606	3759	2071	4338	8206	7829	9335	3097	15329	1421
	'38	2517	1316	1547	23645	2586	2441	439	165	2500	2341	1003	6247	4423	3635	4889	3725	2052	1130	2239	3602	3780	7438	1513	9906	736
	'37	3099	1818	1685	31759	3143	3429	606	181	3173	3076	1426	6903	6504	6125	5374	4731	1944	1298	3079	4756	6402	7406	1707	11116	1062
	'36	1635	1028	906	22896	2194	1660	257	89	1912	1750	370	3629	3899	3585	3423	2329	1107	914	1679	2207	3512	4815	1066	7985	861
	Before '36	1429	1071	671	27254	2218	1905	241	89	1458	1906	776	3739	3296	3633	3603	2312	1070	966	1680	1860	2761	5096	1027	8649	732
	Unid.*	162	31	61	714	37	60	97	82	1069	1175	25	1299	190	156	121	305	258	26		74	1849	119	303	139	6
	Total	108692	38219	52743	816622	113807	141021	31119	33421	210819	209422	49763	543905	308492	226643	187231	185740	162755	53016	149180	258704	508032	249257	99651	338431	46218
CHRYSLER	'54	954	226	247	3915	582	1445	148	219	1348	729	219	4986	1508	1027	956	831	715	238	886	2898	3680	1327	426	1049	281
	'53	1662	777	758	11444	1394	2838	414	647	3570	1870	603	11393	4225	2363	1733	1614	1732	674	2520	4653	9013	3057	1042	2636	567
	'52	901	531	493	7978	1039	1499	280	543	2466	1068	453	6831	2378	1421	1210	954	1045	323	1352	2254	4908	1782	655	1699	419
	'51	1253	782	605	15661	1643	2366	354	787	3921	1587	595	9345	3066	2001	1706	1433	1518	500	1979	3648	6255	2113	895	2618	627
	'50	1532	936	789	18098	2022	2870	368	1035	4252	1896	697	10894	4540	2987	2137	1774	1761	654	2311	4774	6646	2975	1042	3648	717
	'49	1293	772	631	12806	1654	2298	318	909	3466	1292	495	8903	3773	2325	1956	1641	1406	523	2031	3779	5311	3312	778	3184	599
	'48	1039	665	485	10256	1348	1888	229	803	2917	1292	477	6384	2792	1965	1490	1222	1304	456	1841	3006	4229	2467	752	2451	480
	'47	872	676	389	9707	1110	1554	244	436	2360	943	430	5419	2570	1667	1303	1139	979	394	1313	2641	3691	2167	561	2081	410
	'46	616	417	248	7632	776	1174	163	336	1584	680	294	3678	1859	1033	885	733	559	280	982	2086	2247	1343	273	1373	237
	'45-'42	165	160	74	3416	226	373	67	72	443	179	99	980	412	219	201	279	161	55	229	538	401	435	97	449	76
	'41	676	614	344	16454	1174	2024	299	372	2270	824	405	3774	2042	1197	946	1103	652	365	1329	2796	2236	1883	315	2140	411
	'40	417	349	209	7516	693	1046	113	158	1086	488	214	1884	1202	691	538	701	324	218	808	1585	1309	982	193	1302	211
	'39	267	253	78	4606	374	638	78	66	692	282	107	967	558	388	300	399	176	132	438	917	542	552	91	776	124
	'38	92	111	44	2443	136	300	36	51	263	102	32	466	305	196	186	199	83	106	209	472	257	294	36	422	64
	'37	73	181	39	3316	257	395	57	34	316	113	109	647	404	248	196	231	79	114	277	575	326	439	41	478	102
	Before '36	37	66	18	1863	144	212	9	13	88	48	45	276	170	148	95	112	35	61	88	184	165	225	27	246	69
	Unid.*	15	7	8	94	6	7	10	16	144	104	10	188	25	26	51	27	27	2	16	17	214	12	25	13	
	Total	11387	7634	5349	146810	14653	22706	3661	6436	36517	13386	5478	76029	32691	20624	15439	14978	12647	5122	18212	36970	51010	27462	7262	27043	5499
DE SOTO	'54	366	140	163	3119	261	719	106	230	977	606	162	3239	1288	821	429	380	486	251	468	1645	2886	882	222	967	166
	'53	1083	448	706	9699	863	1970	291	563	2652	1327	464	8608	4030	1790	1043	1063	1574	525	1754	4142	7879	2467	681	2580	456
	'52	700	432	553	7721	636	1277	203	387	1879	950	384	6858	2406	1257	956	887	1158	385	1100	2733	4157	1704	473	1937	336
	'51	880	414	567	9494	771	1606	229	483	1842	1065	373	6854	2753	1507	1150	979	1141	415	1290	3404	4677	2035	515	2425	357
	'50	1067	622	640	12718	1160	2032	336	579	2746	1281	527	8753	3761	2070	1497	1229	1674	539	1646	4233	5761	2827	681	3179	451
	'49	899	532	526	11712	938	1811	277	477	2258	958	498	7286	3111	1558	1196	1026	911	426	1434	3886	4666	1917	408	2406	399
	'48	729	503	412	9602	864	1307	181	391	1738	1009	371	6329	2621	1065	966	773	796	402	1110	2763	3504	1276	336	1652	252
	'47	885	475	236	8765	809	1157	146	306	1704	706	305	4239	1873	971	740	671	880	367	972	2364	2772	1127	227	1302	227
	'46	472	328	196	6863	474	1036	106	196	1200	516	211	3022	1420	726	521	508	614	244	767	1624	1940	943	168	1112	182
	'45-'42	149	140	84	2652	169	223	38	44	286	142	71	486	324	169	174	169	194	53	169	417	247	269	80	331	39
	'41	463	410	206	11113	690	1240	138	182	1173	496	285	2123	1366	619	602	588	336	290	743	2005	1287	987	170	1512	137
	'40	219	228	126	5725	337	803	87	108	681	266	165	1492	973	384	374	447	240	179	565	1169	796	639	130	1030	114
	'39	186	169	72	4082	243	594	54	82	439	194	102	762	531	219	294	286	139	123	396	400	420	426	74	630	56
	'38	66	89	34	2188	124	301	31	19	166	66	51	377	240	113	122	109	53	89	159	359	205	263	33	382	30
	'37	79	161	61	3216	197	415	37	19	221	67	78	531	441	148	166	162	52	87	210	440	306	381	22	516	29
	'36	36	48	19	1997	64	187	9	6	84	24	23	134	108	66	63	49	13	21	66	83	87	111	6	152	24
	Before '36	18	39	13	1479	66	136	7	9	44	27	18	130	58	66	60	38	27	16	76	88	81	102	19	164	15
	Unid.*	13	2	3	89	3	9	2	12	84	6	6	122	23	11	19	17	15	1	6	146	13	11	4		
	Total	7586	5130	4794	111611	8355	16833	2264	3872	19942	9396	4113	58733	29617	13316	10372	9154	9718	4485	13823	32008	47925	19496	4241	22874	3280

Unid.*—Unidentified as to model year.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Cars in Use by Makes, by Model Year, see page 118

STATES AND MODEL YEAR

Model	Yr.	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
BUICK	'54	2679	305	725	6306	832	22485	3266	716	11739	2896	2114	16215	986	1521	949	3106	10472	1009	522	3548	3334	1282	9975	596	225869
	'53	3907	610	1194	14885	2219	42747	9130	1673	28765	6848	4211	32030	1950	4401	1621	7262	20231	1883	957	7294	4703	3790	12969	1172	456770
	'52	2702	470	725	9748	1509	27096	5328	1117	17542	3857	3346	19579	1264	2515	1149	4202	16994	1406	624	4633	3866	2197	6793	857	296894
	'51	3522	630	1010	14037	1634	36396	7027	1457	23931	4707	4563	24877	1553	3245	1684	5764	20479	1990	799	6257	5917	2919	9543	1166	377471
	'50	5596	970	1712	23170	3161	57623	12307	1987	38636	6307	7679	40166	2781	5323	2753	9959	35416	3940	1264	9289	10345	5026	15412	1775	626990
	'49	2299	509	1026	12681	1148	31293	4814	832	21443	4022	3618	19670	1539	1852	1110	3697	*2266	1717	652	5420	5332	2634	7178	776	296335
	'48	1400	352	653	7662	882	19794	2729	476	13899	2314	2406	12113	1056	1304	981	2364	7879	1030	456	3373	3845	1614	4620	440	192384
	'47	1512	430	696	9687	781	23381	3499	562	16411	2566	2940	14068	1240	1470	791	2786	8648	1264	498	3865	4234	2049	5077	451	219762
	'46	852	205	433	5209	416	12882	1909	311	8562	1566	1701	7154	708	796	411	1660	4603	699	334	1858	2486	1305	2785	240	110786
	'45-'42	375	106	142	1543	167	3387	721	148	2205	636	927	2164	328	329	163	648	1700	321	76	444	1270	501	906	111	43232
	'41	1485	418	644	7421	576	18011	3419	431	10476	2403	3801	11099	1245	1723	803	2705	6085	1295	457	2821	5389	2167	4803	437	192772
	'40	962	261	699	6224	386	15991	2110	318	7297	1616	2066	9679	1106	1173	418	1821	3253	683	457	2087	3009	1706	3240	301	140174
	'39	562	91	358	3249	160	8325	1101	155	3402	1003	1076	4777	635	894	221	829	1518	336	276	1203	1618	934	1792	163	72451
	'38	353	79	214	2100	96	5871	637	94	1854	861	678	3226	314	323	132	402	953	201	181	646	916	616	1063	69	45939
	'37	415	110	259	2432	100	5818	488	93	2368	861	676	3707	336	296	144	377	767	222	163	634	1251	475	1217	104	49461
	'36	221	46	134	967	52	3447	211	38	941	284	383	1691	157	166	72	139	339	97	97	276	481	185	435	50	22106
	Before '36	225	31	106	910	34	1447	135	45	633	177	185	624	109	91	107	83	270	46	77	177	388	76	332	27	15259
	Unid.*	19	5	29	235	6	148	3	1	162	38	15	397	13	17	16	156	287	2		31	58	4	23	2	4241
	Total	29056	5849	10724	130666	14122	334353	58635	10389	211584	43199	42897	223286	17673	27571	12936	47863	108379	16114	7997	53894	58244	29376	89376	8747	3380469
CADILLAC	'54	416	122	111	2140	190	5383	642	121	2527	492	435	2992	117	232	113	525	2258	193	75	567	992	193	987	119	49166
	'53	586	347	201	4193	414	10366	1418	240	5837	1071	1093	6669	461	691	216	1073	5822	447	112	1319	1129	565	2021	221	99732
	'52	481	287	178	3578	382	8322	1135	206	4683	957	932	4531	414	588	179	911	5076	461	100	1064	1086	442	1389	193	83301
	'51	469	366	192	4383	434	10057	1502	173	5462	1166	1123	6351	564	761	211	1151	6148	586	100	1221	1466	496	1710	227	98726
	'50	385	401	225	4211	471	9201	1299	120	5029	1040	1244	4900	613	573	165	952	5666	615	137	1167	1765	513	1588	178	96214
	'49	385	307	192	3888	357	8461	1184	137	4676	953	1017	4451	470	632	183	861	4311	525	136	1007	1624	486	1416	162	83986
	'48	161	163	109	2400	147	5226	582	45	2983	509	503	2561	276	288	82	475	1916	256	73	537	810	276	874	64	46854
	'47	196	202	137	2778	180	6292	714	53	3104	486	467	2936	330	343	79	571	1958	229	81	686	823	306	930	76	51563
	'46	76	87	70	1299	89	2836	311	10	1449	237	237	1294	131	162	34	296	894	108	41	318	456	158	381	26	23623
	'45-'42	45	44	33	577	39	1166	186	6	954	101	130	582	64	97	14	117	436	45	19	102	235	60	184	7	10648
	'41	153	180	126	2070	147	4504	603	30	2225	466	521	2368	343	373	58	501	1845	212	81	474	891	311	713	84	44388
	'40	49	57	64	1040	67	2277	227	10	988	211	297	1224	157	134	21	167	557	94	32	235	329	156	365	21	19233
	'39	38	61	54	765	44	1757	178	10	634	133	200	821	116	123	21	108	320	68	35	180	250	106	181	16	13784
	'38	18	28	29	385	18	743	78	4	282	74	107	320	55	48	10	52	145	35	22	74	118	38	78	6	6300
	'37	48	27	32	429	16	1001	77	8	357	121	101	451	54	47	13	47	110	35	32	72	207	65	125	18	6402
	Before '36	15	12	7	165	6	228	22	2	124	29	54	137	28	12	6	8	38	12	13	28	62	16	27	2	2809
	Unid.*	17	13	8	182	7	245	25	4	116	30	41	154	25	13	4	14	42	16	16	16	65	5	27	1	2916
	Total	4	7	5	79	1	40	2		34	8	2	107	3	3	2	28	53			9	13	1	8	1	1042
		3567	2703	1773	34411	3001	78029	10183	1181	40839	8040	8434	41081	4122	5112	1446	7810	37282	3958	1122	9301	11949	4182	12999	1492	740824
CHEVROLET	'54	7579	586	2743	21055	2690	51539	12410	2906	29395	9548	5986	39197	1980	6451	2689	13711	42319	2023	1574	11561	8546	3707	13838	1479	649931
	'53	12364	1586	4299	40081	6182	96707	29059	6213	78252	19273	13139	85604	5612	16240	5740	22529	83044	4948	2941	24624	15627	12206	31579	3157	1296410
	'52	8636	1025	2536	24739	3850	69126	18182	3890	49447	12903	9507	53451	3502	9683	3563	13619	49870	3629	1795	15622	11588	7232	17377	2170	797511
	'51	12343	1490	3733	37833	5552	98128	29644	5817	72721	18232	14253	75121	5620	16119	5662	20582	73606	5558	2902	20970	18626	10692	27144	3019	1177605
	'50	14115	1617	4233	40272	6837	94214	32836	5789	82258	22674	16136	79064	6090	17485	6351	24662	85497	6626	2639	27377	23083	12752	29828	3441	1321815
	'49	10752	1272	3288	31267	5332	69818	24756	4917	63058	16849	13035	58759	4839	14179	4943	19546	69483	5069	2120	20134	17840	10412	24027	2580	996186
	'48	6732	724	2301	19941	3506	43047	17519	3614	40675	12466	9027	40738	3040	10156	4030	14727	40323	3314	1454	13931	11132	9034	17039	1790	677718
	'47	8825	656	2970	16312	3541	39306	16724	3542	39857	11813	8013	35023	2974	9907	4335	13679	38462	3264	1396	12532	10863	7500	15627	1712	623560
	'46	4957	427	1268	11091	1991	23899	10309	1981	20477	9670	4817	20006	1776	6237	2532	7794	22364	1682	794	7423	6801	4825	8967	902	386584
	'45-'42	2718	284	440	4181	1038	8803	4496	983	7857	3325	2530	9660	854	3100	1156	3671	10666	1029	281	2074	4027	2229	4169	470	167283
	'41	10722	947	2287	17331	3389	34719	20620	3530	30027	13990	12201	32623	3846	14263	4446	17494	37625	4125	1248	12154	16917	9385	18467	1882	696380
	'40	6590	647	1624	12974	2282	24691	13168	2357	21033	9542	7636	23999	2838	9943	2822	10702	23086	2705	1108	9144	10307	7019	12896	1209	473329
	'39	5006	408	1222	7052	1348	16098	8267	1567	11364	6425	4961	14302	1899	6359	2151	6824	13643	1625	635	5830	6867	4396	8675	771	305370
	'38	3216	297	881	3883	777	9864	4412	1119	6266	4078	3223	9051	874	3857	1306	3944	8436	867	439	3071	3964	2156	5663	516	176029
	'37	3427	363	826	4360	846	9982	5624	1061	9548	3756	4671	10976	1061	3735	1381	3610	7746	1269	476	3875	5246	3367	7353	619	217854
	'36	2344	222	500	2229	409	5562	2548	621	5940	2512	2814	5468	490	1938	894	1795	3944	670	284	2264	3449	1775	4454	354	120911
	Before '36	2871	226	684	3019	371	6992	2745	1012	8157	2356	2900	6916	555	2196	1010	1981	5493	547	325	2327	2731	1416	3946	362	134929
	Unid.*	99	33	61	541	24	313	41	5	376	201	46	3085	24	74	122	637	1091	4	4	107	167	19	96	12	15893
	Total	125328	12820	34976	298839	48019	683899	252760	50833	570544	176006	133414	569542	47709	149823	59181	200409	698150	49277	22916	195184	179882	109191	259836	29051	10234210
CHRYSLER	'54	887	99	171	4001	283	10327	774	249	3252	886	496	5167	279	288	185	622	2361	277	142	880	804	486	2228	148	62371
	'53	1287	362	456	7544	685	19907	2386	710	10522	1272	1477	12095	904	1033	867	1729	6544	695	416	2554	1810	1078	3207	422	154133
	'52	914	236	267	3570	456	8832	1307	480	5662	1012	1229	6367	392	617	323	956	4437	509	162	1703	1517	790	1606	306	87062
	'51	1413	340	338	5518	619	13543	1734	634	8949	1297	1603	9748	680	734	554	1492	6224	755	273	2309	2729	1122	3025	416	135380
	'50	1690	373	426	6917	730	15990	2067	747	10766	1674	2268	11774	906	835	643	1701	7187	918	311	2418	3443	1320	3914	496	162226
	'49	1424	243	336	5775	629	12466	1678	636	9286	1557	1746	10075	712	695	641	1443	6986	780	246	2078	2957	1295	3151	404	130966
	'48	1079	256	283	4174	437	9333	1146	441	6701	1243	1224	7114	492	541	471	1247	4310	589	229	1679	1977	1012	2311	312	98523
	'47	1006	201	247	3479	375	8217	1062	351	6085	1100	1189	6397	442	476	420	987	3724	528	176	1356	1789	997	2004	227	87773
	'46	553	148	178	2707	227	6177	716	174	4342	694	908	4619	269	366	227	686	2254	305	126	955	1275	686	1302	132	61278
	'45-'42	144	56	48	705	54	1458	226	43	961	229	252	1186	110	108	44	141	513	124	29	167	496	175	319	43	17232
	'41	619	238	294	3613	316	8380	1291	157	4946	881	1961	6903	510	570	269	914	2092	494	163	1231	2060	932	1886	167	87979
	'40	362	95	135	2565	136	4711	685	90	2728	519	967	4116	304	299	142	548	1096	237	86	738	1141	612	968	96	49698
	'39	183	86	74	1129	84	2781	385	54	1285	353	525	2387	205	174	82	233	538	147	54	334	691	322	510	54	26352
	'38	124	28	55	854	33	1902	163	26	801	140	319	1126	96	64	47	116	325	61	33	206	388	129	290	24	13508
	'37	112	40	56	699	44	1685	156	45	1048	143	325	1902	127	58	59	105	256	122	43	172	584	233	387	29	17409
	Before '36	103	20	41	389	21	636	66	41	412	91	290	724	46	56	32	48	146	27	41	69	249	95	199	34	8133
	Unid.*	12	6	9	106	2	90	1		103	14	4	202	7	14	25	49	81			12	31	1	18	2	1836
	Total	11687	2880	3343	53113	5149	128770	15759	4871	77824	12563	17479	92257	6810	6951	4778	13135	47908	6602	2580	18822	24320	11704	29442	3398	1267496
DE SOTO	'54	249	76	139	2303	121	6095	570	205	2633	294	500	3878	150	246	129	860	1174	196	90	690	726	270	1028	64	45139
	'53	662	235	348	5070	400	16174	2016	453	9218	1202	1463	10425	739	922	404	1681	4070	645	169	1655	1577	979	2764	273	122907
	'52	853	148	201	3207	347	13046	1359	337	5100	1062	1082	6196	419	630	314	985	3406	410	136	1380	1367	824	1831	210	81481
	'51	888	144	243	3724	313	12119	1413	415	6166	1227	1188	7562	489	671	400	1140	3990	479	189	1580	1696	816	2067	192	95196
	'50	883	227	290	4857	486	14252	1922	526	6361	1473	1686	9864	719	853	515	1574	4742	700	219	1917	2478	783	2519	286	124803
	'49	594	177	237	4251	304	11135	1412	371	7267	1010	1588	8309	573	642	337	1095	3259	653	204	1522	2183	733	2610	238	102102
	'48	372	144	254	2778	265	8635	931	307	5441	907	1056	6089	395	457	232	809	2425	456	150	1361	1667	599	1913	179	77632
	'47	262	134	192	2667	208	7234	816	168	3041	863	1074	5674	339	370	232	660	2061	406	140	1050	1541	554	1756	123	67265
	'46	335	89	169	2530	150	5373	700	139	3635	665	822	4043	233	312	161	571	1564	346	106	856	1235	483	1195	96	50923
	'45-'42	99	27	23	435	43	927	139	35	693	149	279	771	62	93	76	148	382	111	36	136	426	112	283	36	12327
	'41	253	148	174	1946	142	4318	585	116	3246	826	1252	3872	282	332	113	516	1662	428	114	694	2095	866	1233	103	53178
	'40	143	54	144	1466	74	3255	395	84	2227	315	769	3149	201	171	79	376	856	234	72	522	1003	416	877	99	34189
	'39	116	49	94	936	42	2222	227	33	1241	165	463	1784	132	121	48	192	396	177	40	299	671	234	476	47	21549
	'38	64	20	51	403	29	1067	94	26	541	129	231	884	46	34	22	93	198	88	29	155	326	121	217	19	10488
	'37	104	39	80	529	32	1342	167	36	978	147	369	1213	93	80	33	105	179	121	32	163	564	169	380	26	14619
	'36	29	13	11	139	6	293	34	6	297	43	134	397	28	14	11	25	56	45	12	44	196	62	124	12	4083
	Before '36	43	14	21	194	11	301	45	12	229	22	132	387	36	18	16	26	74	28	9	61	204	31	94	13	4722
	Unid.*	8	2	4	36	1	42	3	1	34	16	8	182	4	2	4	39	37	1	1	7	25	2	9		1247
	Total	5647	1734	2611	37899	2980	106922	12782	3244	61699	9735	14190	75640	4936	5842	3150	10589	29422	5501	1707	14354	20838	7348	21715	1902	924131

Unid.*—Unidentified as to model year.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Trucks in Use by Makes, by Model Year, see page 119

CARS IN USE BY MAKES, STATES,

Model	Yr.	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
DODGE	'54	1133	429	886	7097	880	2282	217	495	1983	1804	366	7040	2984	1965	1189	1272	1277	571	1013	3467	9463	1894	861	1597	511
	'53	3634	1323	2016	20126	2163	6822	1035	1296	6719	4769	1177	19912	6303	4992	3869	3644	3679	1549	4519	9886	19315	5135	1887	6124	1170
	'52	3452	845	1491	16444	1772	2666	669	1355	5323	3369	656	15759	5616	3547	3174	2515	2723	994	3446	6340	11552	4206	1434	4678	878
	'51	2736	1031	1707	19667	2162	4630	798	1537	6823	3675	1063	19653	6907	4963	3415	3060	2830	1189	4175	7516	13217	5177	1552	5326	1127
	'50	3869	1547	2315	23016	3353	5575	974	2086	7852	4742	1181	21722	9012	6868	4780	3643	4323	1483	4901	9629	15267	7363	2008	7614	1307
	'49	3149	1372	1719	22035	2357	4810	798	1573	6672	3776	1316	18042	8109	6007	3879	3474	3892	1317	4282	8505	12729	5513	1594	6579	1175
	'48	2136	883	1196	17638	2108	3490	648	1245	4540	3072	751	13671	5865	3389	2594	2458	2877	1185	3175	9835	9517	3650	1200	4691	768
	'47	2047	1057	982	19538	1990	3759	662	1250	4662	2730	824	13337	6037	3446	2587	2637	2308	1176	3364	6803	9345	3703	980	4569	811
	'46	1612	680	734	13440	1316	2475	369	676	3105	1715	572	8350	3867	2169	1715	1806	1456	737	2250	4290	5811	2584	636	3189	498
	'45-'42	613	342	328	6616	526	744	121	124	956	600	228	3370	1062	693	600	673	718	232	573	1315	1244	699	264	1079	166
	'41	1537	930	650	18782	1566	2767	330	616	3310	1466	616	5313	3375	2130	1758	1903	1342	779	2170	5102	4441	2176	562	3540	473
	'40	1428	783	583	14140	1206	2169	233	353	2559	1267	490	4612	2971	1790	1444	1797	1133	679	1876	4123	3790	1962	509	3561	361
	'39	982	497	492	11089	967	1660	171	259	1651	672	327	2772	1632	1341	929	1168	742	422	1108	2919	1926	1381	388	2803	245
	'38	824	229	157	8674	805	776	83	95	706	315	137	1092	728	556	486	646	342	249	534	1144	716	790	144	1126	113
	'37	648	486	283	11662	776	1809	149	152	1094	487	318	2262	1683	1003	881	1036	409	422	993	2095	1727	1456	185	2156	226
	'36	267	342	189	9510	651	890	83	106	625	306	230	1257	1013	671	551	872	267	255	762	1639	1112	801	131	1361	213
	Before '36	180	226	113	7574	473	945	33	52	344	233	190	816	769	655	541	434	215	207	115	494	997	739	108	1268	170
	Unid.*	15	6	7	201	6	24	17	38	290	213	11	286	96	35	14	53	52	1	20	22	436	12	39	24	2
	Total	28433	12953	19433	242579	24863	47780	7217	13228	58601	35216	10650	158175	69511	45620	34419	32904	30585	13427	38283	80823	119212	49183	14082	61265	10214
FORD	'54	9605	2496	4336	48017	5035	8933	1167	2080	15309	12539	1666	43453	16965	11718	7999	8208	10155	2758	9482	20559	50652	13186	5222	14844	2511
	'53	16717	5799	9107	91000	9422	16389	3707	5225	26542	22418	4375	73447	33349	21013	17902	15499	19458	4377	15897	29253	100447	24336	10091	29584	5204
	'52	9118	3415	5078	49799	5729	8049	1983	3134	14766	13112	2636	38576	18194	11177	10465	9477	10159	2501	8709	15196	48976	13614	5694	16011	2736
	'51	19877	5270	7972	76209	9080	12323	3061	3799	21530	19630	3892	51799	27515	16358	15703	14883	15137	3863	12963	23303	63781	21249	9110	24246	4108
	'50	20931	5954	10122	95450	11446	13562	3213	4266	25806	25460	4492	62670	33278	25348	19710	19516	19256	4536	15141	27963	70644	26496	11985	31830	4562
	'49	16722	6186	8599	85158	10627	12163	2770	3345	23050	22311	4444	56671	30411	24696	17834	17775	17066	4241	12302	24046	58102	23719	10228	28854	4185
	'48	9316	1265	2526	19145	2712	2311	551	490	5224	6979	1038	10124	5942	5150	4074	4230	4713	1088	3217	5442	10426	5117	3219	6137	919
	'47	7473	2212	3602	35096	4147	3891	855	787	8505	10256	1782	15692	9961	7583	6660	6616	6597	1879	4925	8799	19020	7877	4420	10219	1511
	'46	9663	2392	4848	30216	4567	4156	995	853	8239	12916	1988	16366	9201	6784	7082	6859	7965	2070	4636	9725	17284	9676	6381	10815	1588
	'45-'42	2447	886	1566	11981	1494	1121	299	120	2819	2973	622	3420	2256	2578	2127	2259	2209	966	1049	2380	4132	3059	1736	3447	470
	'41	10074	2812	5300	43178	4929	5173	771	519	9249	12475	1694	11873	8383	10102	8579	9249	7419	2111	3451	10807	14786	12899	6509	14223	1706
	'40	7266	1675	3396	30775	3666	3557	416	290	6635	12486	1348	8313	6308	7458	5674	5390	4804	1584	3121	7543	10901	8838	4320	9643	1208
	'39	3570	1046	1714	19484	2313	2174	285	201	3509	8212	811	4847	3825	4874	3412	3174	2773	887	1795	4252	5963	5773	2192	6392	676
	'38	948	547	628	11338	1052	1092	160	108	1539	1369	375	2051	1693	2327	1599	1203	1064	408	736	1614	1806	3298	609	3032	340
	'37	1445	629	781	16946	1579	1940	288	121	2313	1679	611	3333	3072	2753	2474	1791	1109	662	1230	2560	4514	4808	921	5114	580
	'36	1722	922	935	18598	1496	1767	180	139	2211	2367	565	2509	2104	3028	1956	1780	1217	690	1135	2417	3391	3279	906	4275	589
	Before '36	6282	3883	3610	72560	4873	4986	486	191	9288	7781	2016	11341	8743	12135	10701	9981	3992	2242	3217	4241	12245	16356	3671	18429	2061
	Unid.*	127	35	80	535	30	189	54	69	854	1215	69	966	172	189	89	296	246	9	188	50	2275	104	315	100	1
	Total	148428	46794	74414	753569	84333	103364	21130	26356	184447	183400	34322	418471	217671	178386	144042	131186	135383	36381	94086	200152	497940	253905	88882	238645	35008
FRAZER	'54																									
	'53																									
	'52																									
	'51	84	66	33	547	78	136	23	22	230	64	36	634	329	211	194	91	110	30	105	174	486	389	23	227	37
	'50	17	9	9	216	18	13	4	6	52	11	16	141	65	38	50	36	11	13	27	38	122	54	9	36	10
	'49	242	129	150	1280	194	124	62	44	476	199	158	1702	767	764	463	301	308	101	223	245	1202	712	134	544	122
	'48	453	266	272	3182	534	375	106	96	919	330	340	3775	1635	1909	1069	535	540	117	452	623	2518	1256	250	1301	260
	'47	929	329	244	5483	850	627	117	157	1237	396	373	3296	1541	1047	909	661	495	229	605	1156	2332	1062	187	1176	246
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	Before '36																									
	Unid.*	25		10	225	9	19		2	50	29	4	78	66	16	10	27	17	3	9	16	130	7	16	28	
	Total	1360	793	724	10882	1269	1294	318	328	2972	1009	931	9628	4396	3985	2685	1671	1498	502	1421	2252	6770	3490	629	3312	675
HENRY J	'54	5	1	1	19		13	1	6	33	13	1	48	16	1	18	10	15	13	24	49	29	2	2	13	2
	'53	101	101	100	767	45	235	2	74	817	250	24	484	304	88	224	141	227	165	296	540	823	121	78	298	34
	'52	402	190	226	1946	90	412	1	141	821	372	41	834	541	122	331	216	360	150	515	992	1822	257	184	447	71
	'51	1049	358	599	3699	432	1561	7	388	2815	1357	155	3899	2004	527	932	574	907	442	1651	1601	3811	1100	536	1349	215
	'50																									
	'49																									
	'48																									
	'47																									
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	'36																									
	Before '36																									
	Unid.*	40	9	4	148	11	28		2	67	28	1	44	58	17	6	16	27	11	63	25	51	6	27	63	1
	Total	1699	657	927	5679	580	2247	11	611	4063	2029	222	4419	3001	755	1508	957	1530	781	2549	2907	5736	1494	928	2134	323
HUDSON	'54	137	79	87	1211	249	488	58	79	431	184	175	2698	768	389	284	164	124	173	197	931	1719	499	75	252	244
	'53	629	339	242	4738	906	1309	161	282	1219	884	448	6446	2029	894	844	575	479	337	1026	1560	4430	1178	323	816	473
	'52	729	421	286	6796	900	1232	208	476	1483	714	466	6021	1915	933	1205	670	472	364	1151	1474	3634	1009	305	900	456
	'51	1030	702	584	10851	1809	2602	338	580	2703	1239	802	11868	4133	1797	2103	1081	875	654	1832	2984	7229	2343	665	1924	916
	'50	917	759	481	12627	1887	1403	249	560	2571	1114	804	11304	4121	1914	1720	1192	895	540	1657	2879	6042	3205	739	1792	882
	'49	1511	1017	810	13255	2023	1677	299	735	3502	1700	866	11601	5203	2960	2614	1949	1677	662	2095	3107	7059	3725	745	3820	981
	'48	1129	987	481	10165	938	1556	234	452	2358	1078	455	8658	2949	1987	1505	1159	938	567	1599	2731	6138	1962	484	2155	361
	'47	894	381	337	8666	629	982	168	236	1610	865	341	8881	2050	1119	938	866	847	395	1077	2125	4283	1171	300	1609	239
	'46	835	426	253	6841	570	995	158	205	1505	822	330	3270	1833	1305	986	850	682	403	935	1999	3490	1123	251	1371	236
	'45-'42	207	133	48	2133	194	285	31	10	297	199	157	561	390	300	250	191	110	122	156	412	506	221	61	467	99
	'41	383	267	126	5427	312	632	82	72	809	234	206	1210	861	541	443	346	206	276	445	1130	1479	502	87	832	128
	'40	216	175	76	3209	205	469	46	55	582	172	139	937	727	447	317	285	177	189	330	779	959	360	75	645	127
	'39	90	79	32	1475	186	288	14	17	294	87	70	357	225	179	175	104	81	86	125	374	358	189	28	296	46
	'38	29	33	14	788	96	104	11	12	144	49	44	156	125	113	151	49	43	49	64	137	171	121	20	133	22
	'37	90	62	31	1282	204	224	13	17	249	98	82	286	246	163	290	101	60	114	137	300	479	236	29	288	55
	'36	47	35	17	799	114	82	6	10	143	33	52	156	171	106	104	42	27	54	65	143	204	126	13	126	61
	Before '36	36	36	20	880	115	130	13	12	80	36	30	141	140	144	107	45	30	69	44	125	180	107	17	179	48
	Unid.*	13	2	2	88	8	3	5	13	76	65	7	162	31	8	6	8	13	3		6	224	14	9	15	2
	Total	8918	5942	4033	89362	11906	13035	2068	3760	20888	9052	5270	68934	27794	14078	13927	9691	7429	5066	12942	23207	49376	19170	3895	17541	5076

Unid.*—Unidentified as to model year.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Cars in Use by Makes, by Model Year, see page 118

AND MODEL YEAR—*continued*

Model	Yr.	Neb.	Nov.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
DODGE	'54	814	153	380	4292	488	12389	1543	417	6327	624	1054	7384	472	710	488	1475	3810	293	312	1333	1584	977	2388	132	98329
	'53	1602	300	1106	10601	1170	34704	3053	1008	20230	2429	2912	22290	1964	2606	1193	4062	14074	1170	888	4373	3604	3348	6267	606	281881
	'52	1538	310	723	7980	962	24540	3575	794	14099	2053	2064	16953	1162	1830	811	3356	11088	744	546	4236	2726	2136	4965	446	214213
	'51	2219	380	961	10704	945	29189	4181	916	19966	2839	3356	19376	1217	2172	1132	3654	11852	1046	479	4980	3794	2530	6134	582	255282
	'50	2758	374	987	13314	1222	35807	5574	1069	21675	3621	3480	23591	1824	2796	1372	5124	17617	1365	626	5414	5178	2766	7503	743	322586
	'49	2476	295	910	10960	1146	29721	4745	1056	19882	3201	3542	20216	1563	2285	1292	4198	15225	1267	544	4695	5050	2705	6736	684	278442
	'48	1447	282	788	8454	689	21863	2927	653	13425	2233	2217	14327	1064	1493	986	2775	9080	996	476	3568	3390	1903	4393	415	199270
	'47	1487	273	729	9138	741	23030	3197	529	14953	2135	2251	15583	1046	1412	928	2638	9335	978	441	3632	3449	2010	4535	367	204657
	'46	995	196	439	6839	521	14484	2354	389	9557	1479	1671	10209	782	967	565	1810	5872	660	295	2294	2571	1488	3250	258	134972
	'45-'42	358	72	125	1443	170	3341	687	163	2152	842	929	2325	219	384	172	675	1800	271	77	806	1277	801	753	87	39631
	'41	934	210	429	5226	440	12676	1970	336	6152	1566	2963	9053	870	1003	446	1913	4883	639	264	2415	4064	1867	2840	255	132109
	'40	845	189	387	4334	336	9942	1779	266	6570	1330	1850	7734	692	856	414	1582	4120	610	253	1859	2745	1500	2566	205	108702
	'39	599	130	290	2709	211	7257	1133	156	3725	949	1262	4483	529	641	273	966	2932	381	167	1211	2047	922	1644	148	73538
	'38	290	57	122	1382	96	3783	410	67	1557	442	561	2331	182	235	132	381	985	161	91	592	886	397	786	53	33657
	'37	511	120	244	2312	199	6077	653	130	3457	667	1464	4980	384	415	231	700	1368	300	150	819	1839	625	1616	142	63948
	'36	399	87	139	1253	93	3302	396	89	2429	472	965	2611	245	271	158	348	782	282	121	535	1268	491	942	103	40839
	Before '36	380	86	105	894	80	1963	262	94	1515	440	899	1809	126	193	136	243	639	162	72	394	941	372	679	86	29681
	Unid.*	27	10	21	144	4	120	4	1	106	41	11	623	7	6	32	106	205	1	3	14	37	7	29	2	3490
	Total	19683	3840	8799	100999	9341	274329	40303	8138	166433	28243	32014	185184	14286	20406	10691	38886	116877	11389	5886	42589	46442	26126	57986	5304	2025504
FORD	'54	7657	721	2183	26771	2926	43688	10569	2452	29952	8273	5458	33171	1564	4876	2498	11974	34980	1833	1310	12167	9289	3334	13459	1160	592868
	'53	10892	1031	3204	37349	5168	63072	24669	5386	70496	16673	13413	77036	5240	12951	4670	19881	79031	4527	2255	21765	16103	9628	27701	2521	1163078
	'52	6709	935	2618	19668	2980	43715	14575	2992	37343	11508	7275	49424	2754	7710	2628	9779	41981	2970	1173	14065	9299	4795	13047	1575	829861
	'51	16340	1246	2982	28916	4311	65864	27741	4640	98291	15823	10654	96310	4673	13496	4519	17753	61941	4481	1663	19099	14737	7668	19827	2166	943990
	'50	13150	1467	3199	31705	5358	73330	36943	5185	99136	20258	12944	97259	5653	19243	5497	22898	79000	5623	1964	24270	16704	10270	25421	2486	1151496
	'49	12491	1316	2974	25015	4948	62542	31101	5158	90500	15483	12904	92367	4550	18146	5517	21437	66208	5325	1863	19455	15534	9267	22810	2405	1009140
	'48	3734	291	706	4512	1205	11081	7737	1238	11439	7106	2731	9569	841	4371	1615	5088	17445	1092	443	6277	4149	2271	4194	506	229909
	'47	5305	546	1085	8239	1041	20443	13750	2685	20407	8508	4464	17110	1350	7749	2278	7314	25614	1925	738	9731	7118	4238	7033	975	389330
	'46	3615	446	1310	7723	1864	18746	14430	2302	16350	8316	4257	17391	1681	9292	2753	8770	28016	1833	748	7957	6229	4139	7855	995	390128
	'45-'42	1650	206	295	1986	745	4242	3162	784	4269	2776	1405	3507	435	2001	756	2613	6355	714	221	1682	2775	1057	2120	307	106136
	'41	7030	579	1297	6711	1807	14838	14662	3063	16194	11656	6182	14788	1854	10667	2973	9124	27506	2229	877	7489	7565	4546	9354	1036	401350
	'40	5256	371	1054	4192	1193	10010	13432	1802	11129	7738	3604	9445	1390	10750	2068	6960	19702	1446	694	6236	4960	3316	6049	690	289298
	'39	3267	238	591	2352	627	6188	8638	1006	6782	4845	2144	5179	886	5220	1350	3177	10205	967	325	3648	2694	1993	4103	427	164882
	'38	1609	137	290	1114	226	3145	4756	539	2379	2983	1086	2523	337	1667	631	926	3999	349	142	1416	1263	673	2200	211	71861
	'37	1941	184	370	1755	321	5068	2375	710	3642	2332	2042	6027	501	2296	911	1428	4599	609	217	1948	2445	1347	3825	338	111741
	'36	1744	235	433	1646	340	4720	2211	647	4861	2441	2025	3986	402	2012	670	1500	4535	640	161	1415	2660	1367	2503	295	103391
	Before '36	9655	997	1385	4851	1396	11689	9222	4437	14161	9508	6294	12637	1042	9673	3265	4870	16099	1702	924	5953	8434	4083	9631	1161	375196
	Unid.*	114	28	51	368	20	244	48	10	294	248	38	1348	19	105	43	490	901	2	21	70	189	17	107	11	13093
	Total	108253	11632	24986	209086	36297	483426	233140	44535	441384	154276	97097	429101	30211	143063	44556	154638	525080	38177	15371	166513	137128	74926	181318	19147	8104652
FRAZER	'54																									
	'53																									
	'52																									
	'51	63	12	21	340	29	976	117	25	674	22	169	829	39	23	55	81	285	68	29	40	216	77	301	22	9042
	'50	21	4	16	32	13	104	14	3	100	63	24	127	9	3	12	16	76	17	8	75	42	16	48	5	1006
	'49	252	32	47	441	107	1245	319	165	1393	199	277	1414	72	97	273	234	771	139	42	261	434	170	757	66	10625
	'48	564	70	98	1111	224	2944	544	224	2507	514	668	1982	124	199	321	406	1563	270	71	628	821	384	1240	131	40567
	'47	624	81	131	1637	188	4209	733	250	2799	550	909	2953	216	275	369	486	1909	304	92	766	1159	510	1171	132	48639
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	'36																									
	Before '36																									
	Unid.*	3	2	6	80	9	58	6		64	19	22	11	9	5	13	11	77		1	23	28	1	9	3	1245
	Total	1527	199	309	3641	589	9435	1733	667	7937	1383	2087	6887	488	572	1043	1217	4271	798	234	1793	2830	1194	3922	350	119104
HENRY J	'54	5		1	19		43	2	1	32	3	2	48	6	2		7	7		1	12	1	3	8		532
	'53	90	11	63	964	34	1420	258	8	896	41	166	1216	99	168	21	248	511	63	53	234	138	129	186	6	13095
	'52	117	12	93	982	73	1941	509	21	1161	118	247	1636	110	327	33	383	1009	115	56	782	277	162	214	15	19660
	'51	376	64	276	3343	229	6416	2052	123	4483	463	867	5670	322	954	250	836	2015	191	102	1434	944	700	1808	89	64517
	'50																									
	'49																									
	'48																									
	'47																									
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	'36																									
	Before '36																									
	Unid.*	7	1	10	108	7	52	16	14	92	20	1	23	5	3	3	29	41	3	1	163	9	2	115	1	1632
	Total	603	88	452	4916	343	9772	2837	165	6664	664	1295	8990	542	1454	307	1502	3563	372	305	2666	1369	1003	1900	91	99345
HUDSON	'54	116	32	194	1302	71	2616	238	62	1481	86	218	1917	143	117	68	198	410	116	42	404	368	134	727	47	22880
	'53	333	109	418	2361	265	5889	957	193	4027	420	903	4233	382	457	207	539	1578	328	91	1246	1002	457	1483	170	59252
	'52	404	128	310	2857	292	8029	815	215	4090	635	1082	4354	316	514	167	734	2232	494	109	1583	1176	481	1217	239	64020
	'51	1014	211	472	4791	550	9827	1556	501	7966	909	1639	9413	404	981	566	1285	3702	1009	263	1716	2241	830	3254	391	117388
	'50	883	192	388	4080	454	9633	1348	290	7225	1123	1384	7031	486	897	517	1151	2801	954	178	1970	1718	886	3191	327	112068
	'49	961	294	486	4679	630	10648	1836	536	8589	1442	1680	6244	562	1036	741	1905	5447	1384	317	2467	2248	1071	3906	541	126602
	'48	704	181	333	3396	331	8325	1424	261	8452	1210	1226	5885	367	650	313	1299	3632	859	199	1732	1784	775	2196	196	92673
	'47	422	61	270	2286	192	5391	991	122	4121	687	683	4366	356	607	191	633	2283	384	119	1901	1419	695	1447	126	63193
	'46	384	79	218	1776	158	4682	925	114	3748	631	905	3813	370	541	176	658	1709	340	131	876	1323	641	1286	80	56322
	'45-'42	122	22	41	347	46	879	221	24	617	161	287	594	74	149	26	126	301	156	19	114	464	196	320	42	12412
	'41	177	45	150	941	56	1967	419	37	1618	243	722	1957	163	281	99	237	567	256	73	347	1162	346	826	62	28394
	'40	134	31	114	537	51	1328	364	32	1345	206	494	1266	126	196	54	188	409	111	68	264	636	266	573	47	20383
	'39	62	12	54	240	15	712	151	15	421	117	174	631	68	79	17	67	179	53	41	126	264	91	256	30	8819
	'38	43	7	29	125	9	357	54	20	218	66	128	317	23	44	10	23	132	46	21	44	173	44	128	16	4743
	'37	75	12	35	347	19	635	100	33	580	113	240	582	41	77	24	66	215	71	42	76	454	106	283	31	9257
	'36	39	9	20	92	9	263	38	16	311	66	146	248	15	43	16	36	67	48	7	41	199	64	122	21	4888
	Before '36	41	5	40	174	9	331	61	15	291	57	122	222	34	27	37	29	89	23	21	44	192	32	147	25	4917
	Unid.*	6	4	6	46	2	33	2	1	47	11	4	105	4	9	3	35	51	1		11	16	3	9		1199
	Total	5720	1364	3523	30196	3154	69871	11279	2496	53748	9253	12557	53788	4192	6302	3236	9367	26994	6187	1847	14063	16956	6822	21446	2449	623454

Unid.*—Unidentified as to model year.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Trucks in Use by Makes, by Model Year, see page 119

• TOTAL REGISTRATIONS •

CARS IN USE BY MAKES, STATES,

Model	Yr.	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D.C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
KAISER	'54	11	19	19	326	20	60	1	14	61	47	8	319	87	64	29	19	47	19	62	109	126	71	11	87	11
	'53	262	121	96	2184	136	488	116	94	817	262	148	1880	550	231	467	237	300	167	315	515	2134	599	115	375	128
	'52	330	188	162	2226	167	565	208	131	679	334	194	1880	679	416	485	267	400	183	368	644	2001	649	150	490	169
	'51	1082	668	758	6815	866	1970	665	384	2782	1202	688	9421	4062	2868	2081	1367	1650	487	1965	2447	8747	3676	624	2454	492
	'50	135	65	115	1568	149	229	72	68	431	188	82	1150	566	507	387	287	214	114	408	377	701	726	77	446	61
	'49	748	356	583	3953	552	695	181	203	1595	696	362	5166	2472	2200	1295	955	1151	404	871	1392	3821	2437	421	1926	344
	'48	836	394	662	5648	702	737	200	252	1536	696	454	6660	2944	2588	1572	1034	964	295	1046	1643	4887	2308	420	2611	357
	'47	622	388	294	4931	472	725	144	147	1254	522	282	2716	1279	868	758	758	866	316	677	1424	2496	1062	291	1334	286
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	'36																									
	Before '36																									
	Unid.*	48	7	14	106	19	7	1	7	96	53	8	196	69	27	17	66	45	6	22	19	97	19	28	33	2
	Total	4077	2122	2586	30767	3094	5459	1057	1270	8900	3842	2254	29125	13421	9621	6897	4797	5353	1905	5614	9498	24793	11548	2152	9726	1948
LINCOLN	'54	167	109	96	2863	263	403	75	104	667	254	94	1485	385	259	195	101	168	90	207	527	1990	312	79	397	99
	'53	493	196	199	4670	472	965	116	162	1283	582	198	2747	1037	478	441	263	448	129	525	942	2943	648	210	650	187
	'52	305	161	118	3237	319	630	91	129	981	398	113	1725	718	253	299	171	303	108	372	646	1662	364	158	396	115
	'51	342	175	147	3272	378	829	164	167	1121	458	148	2104	806	399	375	211	298	96	414	777	1687	472	188	593	143
	'50	357	143	127	3256	357	894	86	193	1157	604	116	1718	705	386	326	190	331	106	429	706	1472	394	148	613	111
	'49	767	405	299	7649	886	1949	192	383	2562	945	382	4822	1637	983	868	615	822	297	914	1629	2985	997	385	1342	259
	'48	94	50	39	1194	69	164	13	36	301	85	36	353	150	79	76	57	74	24	133	263	230	96	40	126	29
	'47	153	106	86	2299	133	337	34	61	630	164	69	705	303	140	143	137	179	75	196	527	505	193	66	300	30
	'46	110	72	43	1389	111	299	30	36	315	102	37	401	175	116	93	118	139	39	134	344	331	164	58	278	26
	'45-'42	34	20	7	562	30	95	9	9	89	27	12	129	49	18	26	24	51	11	26	95	82	57	18	61	6
	'41	68	60	28	1621	109	199	24	25	210	68	34	216	102	78	81	86	92	48	90	319	149	130	45	200	29
	'40	64	27	25	1543	98	130	17	16	186	61	34	142	71	67	63	70	46	31	71	188	95	89	24	164	26
	'39	57	61	11	1055	68	86	17	4	110	38	16	84	48	36	36	42	47	23	39	114	89	60	26	99	22
	'38	12	25	6	637	29	32	11	7	64	11	7	39	19	20	22	12	7	11	25	63	40	40	3	53	9
	'37	16	41	4	622	24	44	3	1	57	25	9	34	25	25	22	15	13	12	19	58	55	41	6	42	20
	'36	3	10		259	15	16	1	3	24	4	5	16	10	3	3	3	1	3	8	17	17	18	1	25	10
	Before '36	6	1	1	168	10	16		2	4	1	1	23	4	1	3	10	3	1	7	22	6	11	2	5	2
	Unid.*	1	1	4	30	1	6	1	2	42	26	2	88	4	3	4	3	9	3		2	25		3	2	
	Total	3083	1725	1292	35609	3387	4717	804	1282	9772	3772	1231	15888	6240	3305	3058	2131	3037	1020	3888	7174	13810	3879	1476	5257	1120
MERCURY	'54	1506	686	735	19820	1329	2257	288	638	3299	2265	575	9919	2571	2207	1636	1126	1654	656	1741	4979	9969	2713	787	2674	586
	'53	4370	1319	1799	28752	2710	4261	771	1196	7261	5354	1301	28854	7660	4659	4075	2827	3723	1116	3756	7333	19614	5369	2106	6364	1251
	'52	2137	1116	1047	16780	1708	2484	421	589	4217	2721	968	11248	4156	2640	2597	1694	2065	644	2039	3873	9786	3171	1312	3519	801
	'51	3874	1660	2014	29544	3337	4815	690	1122	6044	5329	1297	19492	7231	5363	4533	3013	3761	1128	3497	7129	19670	5837	2064	7154	1322
	'50	4570	1530	1754	26751	3496	4297	669	1261	8351	5847	1104	16738	6330	5354	4378	2841	4236	1014	3488	6703	15039	5858	1934	7002	1113
	'49	3997	1650	1564	27056	3652	4012	630	1154	7348	4947	1239	16236	7018	5675	4609	3310	4215	1043	3340	7056	13175	5601	1669	6873	1210
	'48	852	276	357	4872	577	802	82	115	1225	1017	180	2500	1270	857	836	746	734	153	634	1103	2301	792	456	1186	166
	'47	1275	566	668	9442	1043	1184	168	180	1901	1590	364	3467	1672	1063	1060	1000	1029	345	930	2343	3896	1428	639	1735	345
	'46	1289	486	646	7885	909	1009	108	111	1685	1694	356	2944	1527	1207	968	1032	1150	246	812	1950	3041	1585	747	1902	364
	'45-'42	239	116	135	1902	254	174	31	13	352	360	85	994	301	243	199	229	295	61	138	357	467	363	190	445	61
	'41	1102	448	500	8017	709	804	74	99	1310	1250	328	1446	809	990	851	795	779	223	512	1239	1675	1376	561	1745	230
	'40	656	308	288	6402	741	681	82	49	903	804	234	1206	689	640	599	561	461	228	358	1093	1311	1092	311	1304	170
	'39	396	169	171	3779	378	452	39	39	549	448	120	822	319	457	357	263	273	131	219	563	775	673	209	725	109
	'38																									
	'37																									
	'36																									
	Before '36																									
	Unid.*	33	18	16	394	46	43	3	10	256	231	9	294	88	54	49	36	64	9	17	35	286	35	60	32	
	Total	29889	10247	11672	191089	21637	28886	4039	6818	48858	33557	8248	108139	41946	31649	26842	19282	24439	6956	21513	44934	97779	36889	13334	43910	7711
NASH	'54	390	186	124	3489	384	799	44	114	676	394	201	4166	1227	710	589	474	326	215	500	2349	2549	998	123	765	179
	'53	1010	430	277	9017	792	2381	255	322	2252	1012	575	10770	4216	1874	1751	1615	872	539	1627	4677	8208	1856	449	2085	428
	'52	1314	625	795	13481	1208	2100	301	483	3323	1377	733	11521	3957	2057	2597	1657	1599	482	1796	3978	7914	2375	790	4148	481
	'51	1948	1270	1175	19573	2260	3185	462	734	5064	2099	1164	16438	7129	3950	3779	2544	1733	851	2881	5949	11255	3676	1013	7481	713
	'50	1604	943	974	15939	2227	2003	382	969	3567	1469	864	11922	5880	3437	2529	1767	1313	656	2116	4535	6970	4161	744	5736	646
	'49	1175	764	711	9606	1374	1695	281	429	2057	1132	730	8732	3632	2319	1911	1402	1209	572	1792	3590	5529	3043	710	3662	631
	'48	1014	863	539	7513	968	1042	241	353	2050	1129	436	6328	2605	1339	1251	1077	1043	513	1507	3562	5540	2090	595	2329	420
	'47	904	800	434	7225	788	1599	215	273	1746	950	389	6268	2179	1179	1030	1006	851	442	1405	3098	4266	1810	606	2070	338
	'46	787	456	387	6536	750	1337	190	190	1456	767	348	4825	1773	953	925	911	722	396	1171	2589	3153	1640	435	1954	291
	'45-'42	108	86	61	1642	132	214	35	9	226	131	83	838	305	190	179	157	92	95	156	457	356	365	85	381	79
	'41	178	187	116	4211	338	654	73	38	840	190	204	1902	687	490	429	321	173	166	368	1065	959	1002	115	1213	188
	'40	147	127	79	2333	264	428	31	34	432	113	110	1084	420	260	239	241	116	143	294	897	526	903	71	871	127
	'39	66	89	48	1866	181	265	15	16	233	65	79	567	273	153	112	102	89	94	140	515	254	550	48	586	68
	'38	41	34	22	842	92	147	9	9	120	38	27	318	76	125	76	54	31	45	61	253	123	281	29	306	38
	'37	40	85	38	1475	210	264	18	12	173	56	69	356	191	175	129	103	57	96	121	429	280	358	28	380	92
	'36	14	41	12	852	88	104	6	2	83	19	29	180	53	87	61	31	20	25	61	123	72	93	17	128	41
	Before '36	22	23	6	921	74	111	1	11	37	15	18	171	62	73	86	36	20	45	44	106	72	97	22	170	38
	Unid.*	19	5	4	79	6	16	3	13	107	79	5	230	36	22	14	21	27	4		11	217	6	31	13	
	Total	10687	6436	6080	106280	12084	19134	2522	3841	24779	10834	6970	88545	34896	19681	17965	13860	10257	5379	16127	37994	50151	24890	5835	38199	4720
OLDSMOBILE	'54	1924	669	867	14063	1333	2776	538	633	3636	2486	670	15167	4062	2908	1966	1792	2096	627	1841	6987	14149	3383	972	3724	761
	'53	3967	1402	1623	27207	2929	4795	1141	1728	8160	4710	1411	22582	9460	5115	4140	3606	3956	1072	4000	9652	22383	6426	1857	7061	1580
	'52	2249	1057	1161	19216	1969	2963	727	1161	5004	3083	896	13440	5778	3008	2851	2285	2670	809	3067	6181	12136	3724	1362	4084	967
	'51	2913	1443	1482	26754	2858	4566	986	1513	6568	3885	1157	17389	7499	4410	3588	3212	3240	1181	3633	9114	14472	4822	1605	5307	1272
	'50	4301	2118	1943	35380	4137	6909	1418	2160	9277	5907	1572	24461	10912	6835	4757	4018	4568	1687	5140	13606	19018	7870	2036	7851	1986
	'49	2769	1488	1226	27466	2671	5107	980	1592	6864	3373	1139	16934	7749	4405	3330	2966	3385	1202	3722	9813	11745	5082	1256	5946	1110
	'48	1462	793	668	15372	1388	2911	567	900	3539	1694	567	10468	4799	2313	2139	1855	1809	823	2141	6269	6766	2671	722	3748	576
	'47	1594	1035	737	15493	1566	3265	726	815	3633	1816	613	10376	5038	2533	2174	2228	1558	885	2419	7167	6946	2831	886	4047	885
	'46	872	604	416	9401	933	1614	380	390	2026	861	404	5562	2736	1438	1275	1329	902	566	1429	4099	4102	1763	371	2413	323
	'45-'42	293	253	156	4267	296	575	163	79	966	381	153	1294	789	439	429	477	352	210	486	1417	855	547	167	987	96
	'41	1159	988	643	20107	1471	3279	825	439	3054	1376	857	6328	3189	1919	1905	2065	1164	627	1967	7059	3969	2422	686	4316	867
	'40	766	564	470	12732	875	2093	345	201	1992	871	486	3388	2192	1246	1229	1449	696	709	1396	4626	2462	1553	381	2979	361
	'39	469	326	194	7213	605	1190	199	83	915	439	226	1497	927	636	622	746	360	449	749	2573	1076	914	201	1579	190
	'38	165	157	84	4084	313	566	81	38	429	221	127	737	479	366	291	328	174	256	308	1099	479	441	101	816	110
	'37	285	301	182	7877	613	1008	116	79	780	326	216	1432	963	671	538	561	191	340	492	1733	1179	793	115	1361	174
	'36	104	186	99	5238	326	661	52	34	359	169	112	706	566	362	269	255	110	224	300	1004	616	424	44	854	81
	Before '36	99	113	82	3424	237	343	29	19	178	90	64	379	393	251	220	174	94	139	126	430	366	353	37	514	46
	Unid.*	27	3	13	214	11	12	28	29	301	242	5	341	50	27	38	32	39	4	16	35	356	21	41	28	
	Total	24899	13178	12190	259718	24234	43167	8836	12047	87117	51881	10475	151435	67699	39821	31741	30690	26739	12360	32683	92735	129057	45086	12586	67527	10399

Unid.*—Unidentified as to model year.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Cars in Use by Makes, by Model Year, see page 118

AND MODEL YEAR—*continued*

Model	Yr.	Neb.	Nev.	N. H.	N. J.	N. M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W. Va.	Wis.	Wyo.	Totals
KAISER	'54	51	5	19	129	3	291	19	6	299	13	40	276	19	3	14	14	81	7	6	70	70	9	81	2	3613
	'53	160	27	73	969	72	2226	262	78	2685	107	401	2157	137	148	90	216	922	185	45	516	656	145	686	20	23660
	'52	220	45	117	1331	86	2826	503	96	2999	126	862	2866	152	241	98	296	1066	205	66	750	786	211	984	36	30808
	'51	1047	145	279	9048	400	11699	2146	866	9246	603	1915	10281	629	650	651	1185	4126	733	269	1168	2900	966	3632	166	121382
	'50	116	8	126	432	83	1354	233	82	1219	356	195	1497	60	59	116	137	410	76	55	1000	386	159	498	33	17967
	'49	749	55	186	1775	315	5000	931	472	4942	536	918	5196	281	316	544	539	1994	462	109	941	1141	636	2330	182	60048
	'48	1051	101	175	2711	299	6179	1086	316	5372	956	1092	4486	308	383	995	910	2558	414	142	1298	1184	744	2448	196	75316
	47	807	86	162	1714	230	3918	782	184	3172	548	741	2964	255	332	307	691	1557	232	105	902	985	496	1940	112	46287
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	'36																									
	Before '36																									
	Unid.*	4		29	199	9	85	7		119	19	10	35	4	9	11	83	131	1	1	34	33	5	17	2	1007
	Total	3907	486	1184	14219	1497	33968	5850	1735	28362	3282	5693	29743	1788	2189	2420	4235	12947	2335	876	6451	9085	3373	11223	700	309013
LINCOLN	'54	140	57	64	829	102	2201	199	64	899	282	190	1127	68	90	81	202	979	99	30	231	307	94	336	36	19196
	'53	263	121	90	1267	236	3350	581	138	2141	452	508	2243	141	325	132	374	2215	183	52	543	547	283	599	98	37427
	'52	293	70	69	987	141	2063	416	77	1490	308	361	1477	91	194	95	225	1481	146	34	462	389	181	396	70	24929
	'51	226	81	63	1086	169	2502	505	94	1962	294	366	1848	137	241	128	264	1623	165	39	451	438	195	484	103	29830
	'50	232	92	82	994	137	2200	434	60	1677	377	366	1961	100	239	83	267	1427	137	26	546	428	222	494	60	26509
	'49	493	202	133	2486	379	5316	1046	162	3781	630	694	3500	302	457	283	709	3285	434	81	832	1132	504	1169	176	51150
	'48	38	19	27	352	25	690	74	20	374	224	81	316	40	49	17	78	358	32	12	256	92	38	77	22	7070
	'47	84	42	48	627	56	1558	163	17	732	205	212	713	85	109	33	137	849	78	20	210	253	90	211	37	13865
	'46	64	24	26	433	44	980	124	16	491	145	144	564	66	95	22	115	548	57	18	135	167	59	151	16	9116
	'45-'42	12	7	4	75	12	156	29	3	75	38	61	99	18	21	9	26	99	16		12	57	20	37	1	2314
	'41	43	26	36	275	35	565	94	14	221	139	188	345	55	67	17	76	253	48	11	76	184	67	115	13	7183
	'40	43	35	16	186	39	394	73	16	169	113	117	233	47	90	13	98	183	50	6	79	136	46	77	14	5664
	'39	19	20	6	99	20	262	48	16	136	82	85	167	27	31	9	31	99	34	13	41	105	28	54	14	3367
	'38	21	4	12	51	5	122	15	4	42	24	33	77	6	9	6	7	31	23	5	24	42	24	26	5	1817
	'37	19	12	5	43	9	119	16	12	85	32	50	94	13	12	6	12	82	15	2	16	79	13	36	6	1977
	'36	6	1	3	13	3	46	7	1	21	14	22	30	3	3	1	4	13	6		7	26	1	16	2	719
	Before '36	3	1	4	37	2	60	4	3	43	7	9	38	7	1		4	15	1	2	9	16	1	4	1	585
	Unid.*		3	2	24	2	18			16	3	1	57		5	1	10	36			2	7	1	3	1	433
	Total	1614	825	700	9751	1412	22788	3817	690	14161	3339	3982	14796	1204	1939	909	2810	13006	1529	360	3839	4359	1887	4253	696	282511
MERCURY	'54	1535	237	391	7813	526	14022	1578	444	6638	1018	1250	8290	482	719	437	1676	7643	610	267	2234	1877	680	2201	298	136672
	'53	2564	563	746	11264	1529	25206	5412	1041	17753	4132	3221	17086	1224	2782	1086	3763	16492	1388	467	4532	3645	2190	5727	647	287529
	'52	1504	338	447	5815	1054	12929	3116	625	9362	2561	2313	9244	825	1502	668	2000	10471	1062	255	2807	2549	1181	2990	448	161599
	'51	3023	550	745	10612	1702	23295	5956	1173	17599	3763	3809	17186	1232	2563	1557	3557	18157	1664	467	4038	4349	1998	5670	706	285092
	'50	2668	520	714	10503	1620	21087	6102	781	16271	5141	3151	18313	1194	2976	1424	3622	20481	1504	342	4712	4005	1948	5563	772	278946
	'49	2863	532	698	8775	1578	19901	5975	1145	17588	3820	2790	14027	1241	2713	1674	3896	16889	1725	382	4063	4471	2343	5492	713	269930
	'48	433	87	146	1355	243	2844	1075	171	2765	1462	436	2139	212	600	385	823	3156	237	68	1647	600	381	757	107	49807
	'47	744	154	256	2385	331	6112	1794	307	4465	1368	877	3642	350	1135	386	1285	4021	494	108	1391	1256	635	1277	205	73031
	'46	620	111	187	1973	346	4302	1926	352	3469	1297	796	2941	343	1253	472	1362	4064	432	116	1148	1266	635	1305	161	66868
	'45-'42	194	27	63	639	94	616	328	79	469	312	185	660	75	245	92	221	829	103	17	149	269	121	282	44	13196
	'41	590	112	163	1491	321	2419	1340	265	1962	1284	845	1751	240	1040	317	844	2882	377	77	701	1024	447	1045	161	49077
	'40	690	79	134	907	161	2124	811	166	1428	744	1320	1190	199	888	227	540	1615	290	68	626	749	280	843	139	38419
	'39	253	45	69	418	87	1248	491	112	731	514	372	723	128	473	139	279	767	125	37	317	448	169	512	80	20705
	'38																									
	'37																									
	'36																									
	Before '36																									
	Unid.*	21	7	39	297	14	131	19		190	73	14	228	6	13	19	96	418	1	3	38	44	2	12	6	3689
	Total	17982	3382	4769	63417	9799	135640	33867	6713	100980	29336	21649	96855	7062	16888	8804	23970	109652	9882	2696	38233	38449	13617	34065	4476	1721238
NASH	'54	260	72	277	1656	126	4072	401	175	1679	257	535	2805	257	122	154	399	875	143	105	540	788	208	1943	100	38714
	'53	743	186	586	4456	350	10634	1153	437	6802	926	1499	6063	649	560	343	1117	3146	475	427	1258	1909	787	5630	199	113302
	'52	919	266	483	4116	544	12064	1719	414	7620	1673	2145	8440	667	1051	413	1549	5929	700	334	1709	2551	926	5452	243	133002
	'51	1561	249	652	6663	898	17142	2759	652	11283	2068	2220	14405	1074	1657	782	2307	7903	1038	317	2312	4563	1636	9386	430	203815
	'50	1173	256	534	4706	719	12150	2066	470	9160	2149	2161	10383	824	1222	780	1787	6385	982	328	1899	2314	1144	6848	410	165209
	'49	830	170	449	3556	638	9748	1387	401	7268	1486	1706	8164	669	868	584	1328	4470	610	311	1705	2538	1114	6558	322	115398
	'48	643	91	334	3294	367	8796	1288	290	6412	1165	1217	7151	673	883	334	1088	3356	486	184	1509	1882	871	4395	182	93865
	'47	523	89	334	3027	280	7729	1128	236	5329	1012	1107	5826	572	618	297	1092	2771	476	146	1383	1967	844	3294	144	80420
	'46	486	84	249	2517	187	6732	999	215	4670	795	989	4918	501	595	288	951	2367	378	136	1017	1618	767	2858	113	69690
	'45-'42	103	23	27	356	22	707	99	72	561	146	373	651	89	73	59	149	382	93	18	87	537	130	703	21	11827
	'41	186	58	98	1117	67	2245	298	132	1613	293	1069	1905	243	116	136	314	484	165	48	282	1446	295	2037	64	20338
	'40	139	34	66	796	45	1411	113	99	1243	184	844	1356	120	90	81	186	328	99	34	139	711	200	1106	37	19084
	'39	76	18	50	371	14	988	80	40	525	100	329	720	98	43	41	91	147	53	29	69	347	106	681	24	10798
	'38	53	9	26	217	12	567	48	29	258	57	235	388	27	18	26	62	76	38	14	30	201	37	516	21	6165
	'37	69	22	59	365	26	696	49	29	585	72	376	791	69	23	32	74	124	52	29	53	386	64	1125	23	10573
	'36	44	7	33	188	9	270	16	13	185	39	184	238	25	9	17	26	49	30	15	31	142	54	256	11	3963
	Before '36	50	5	28	180	13	279	17	20	157	21	89	269	17	10	18	14	47	21	17	19	53	21	203	6	3797
	Unid.*	6	2	20	65	3	80	7	1	60	24	10	200	4	5	2	35	99		2	5	27	5	16		1041
	Total	7570	1606	4260	37569	4190	96169	13313	3785	68627	12387	17921	76016	6886	7649	4394	12532	36777	6052	2777	13970	24967	9209	61971	2346	1101467
OLDSMOBILE	'54	1724	296	642	9289	867	19875	3614	561	7984	2358	1929	11251	469	1113	691	2207	8870	818	294	2497	2788	771	4593	505	168596
	'53	2610	649	864	10193	1351	29288	6626	998	18648	4113	3992	21155	1669	2997	1096	3834	19971	1642	537	4903	4658	2090	6129	773	312723
	'52	1485	411	552	6801	1024	19429	3747	644	12140	2758	2524	13486	954	2021	711	2378	13284	1024	484	3258	3062	1274	4980	587	199868
	'51	2944	403	760	9870	1150	28635	6043	1060	16943	3129	3343	17367	1484	2622	1074	3287	14261	1396	571	4233	4638	1998	6696	646	265224
	'50	2774	582	1130	14319	1621	39457	7967	1145	24670	4966	4616	24784	2229	3880	1469	4863	19602	2142	686	6119	6965	2758	9652	847	381221
	'49	1676	411	557	10132	936	27564	4558	705	18062	3844	3241	17486	1661	2333	944	3256	13954	2142	560	4423	5307	1956	7303	531	263036
	'48	954	204	359	5043	479	17109	2951	386	11556	1863	1869	10190	963	953	576	1791	8799	896	282	2286	2946	1238	4234	269	163670
	'47	1161	192	606	6841	474	18224	2277	362	12029	1745	1887	11059	1172	1114	543	1891	8487	807	372	2509	3147	1448	4363	305	162449
	'46	886	118	382	4319	279	10498	1373	219	6349	1063	1192	6033	751	853	393	1075	3307	488	234	1365	1894	899	2519	144	92530
	'45-'42	196	58	118	1123	89	2867	435	66	1801	327	585	1704	286	283	87	326	1014	187	57	272	999	299	837	59	29421
	'41	879	200	574	5384	393	12979	1996	257	7439	1654	2384	8677	1261	1109	410	1543	3637	636	333	1703	4669	1539	4001	234	134535
	'40	527	151	471	3851	262	9242	1262	194	4832	1161	1442	5846	797	718	308	1022	2222	983	262	1119	2340	1085	2473	101	88110
	'39	300	72	304	2066	129	5258	626	109	2985	581	779	3033	451	322	165	644	1070	232	171	615	1250	534	1205	91	48086
	'38	161	33	132	867	90	2508	299	80	929	324	381	1343	194	123	71	189	532	127	71	253	711	282	617	34	22466
	'37	314	79	225	1461	97	3866	438	104	1917	539	749	2743	372	216	119	345	817	224	116	386	1375	479	1230	92	40791
	'36	170	40	174	867	90	2200	171	40	1244	256	417	1122	221	121	66	146	386	118	76	214	719	247	751	47	23021
	Before '36	121	29	76	599	27	1167	129	61	758	194	169	720	107	74	71	77	231	66	49	102	391	128	390	35	12903
	Unid.*	13	6	19	193	4	97	2		127	30	19	845	13	12	13	93	206	3	1	13	39	4	36	2	3484
	Total	17472	4004	6404	91156	9086	243429	40199	6787	148045	29283	31351	152202	15304	20491	9857	28961	111369	126	2	6306	38258	47199	16787	60763	5329	2408364

Unid.*—Unidentified as to model year.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Trucks in Use by Makes, by Model Year, see page 119

• TOTAL REGISTRATIONS •

CARS IN USE BY MAKES, STATES,

Model	Yr.	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D.C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
PACKARD	'54	96	96	39	999	116	181	16	67	376	196	37	1245	146	142	124	108	114	74	256	984	999	214	35	245	99
	'53	791	388	295	5865	545	1690	212	434	2356	977	282	6010	2593	709	813	780	1123	333	1467	1987	5941	1630	370	1500	383
	'52	727	364	294	4371	534	1072	152	386	1899	797	281	3677	1473	767	671	656	934	186	1067	1251	3109	1139	436	1355	242
	'51	820	388	306	7772	938	1736	276	480	2643	1069	414	6832	2379	1192	923	963	1296	296	1434	2123	4430	2164	494	1851	416
	'50	739	436	496	8250	880	1309	212	455	2301	994	332	6382	2372	1569	1234	1053	850	368	1414	2095	4622	1957	409	2181	407
	'49	627	500	337	9867	749	1560	248	484	1967	799	251	5063	1941	1218	782	776	643	448	1197	2316	4126	1262	291	1485	262
	'47	302	240	126	4316	367	706	129	194	947	416	138	1942	765	429	357	383	329	190	594	1251	1754	616	129	766	138
	'45-'42	278	166	116	3283	279	613	94	163	648	284	82	1487	696	315	247	347	215	141	442	981	819	485	126	621	99
	Before '38	178	135	36	2760	152	421	53	49	399	181	54	944	281	159	122	176	171	66	253	679	318	256	61	442	47
	Unid.*	310	250	102	5763	389	1026	127	135	967	331	101	1168	489	279	222	377	232	104	549	1480	874	403	104	888	104
	Total	281	275	94	5787	354	1296	96	101	932	382	119	1223	471	264	230	376	224	202	548	1340	677	544	104	903	82
	'39	104	107	47	2679	139	511	47	60	383	110	36	482	185	108	92	117	91	107	243	649	237	244	47	391	29
	'38	57	66	34	2111	109	355	23	29	227	70	31	327	103	94	85	86	94	60	159	381	144	215	17	304	34
	'37	91	169	46	3153	196	781	38	80	385	162	51	829	230	164	129	190	95	156	249	616	412	323	41	489	71
	Before '38	22	32	9	1524	58	184	10	23	75	33	11	140	96	44	44	30	27	40	73	234	93	93	8	144	13
	Unid.*	24	31	7	1635	50	216	17	22	42	22	13	134	95	41	17	42	26	39	65	185	82	103	14	86	11
	Total	2		4	69	2	4	0	0	104	52	11	117	15	7	5	17	10			0	132	8	5	4	
		5947	4122	2766	73945	6689	14994	1952	3588	18593	7483	2524	41966	16072	8827	7601	7187	6715	3196	11037	19711	30294	13675	2906	15185	2707
PLYMOUTH	'54	3671	1292	2153	16279	1673	4930	667	2142	6412	4993	790	21066	7615	4727	3132	3142	4487	1983	3480	10010	16165	5484	2283	6919	1183
	'53	8681	2646	5483	39427	4582	8779	1825	4250	13408	9701	1956	40484	16342	16384	9434	7358	9208	2855	9628	17218	34872	12664	5625	17259	2284
	'52	4769	1567	3027	26751	3013	5028	923	3284	7505	5769	1407	23089	9841	6986	4840	4283	5550	1715	5732	10322	19485	7539	3237	9196	1411
	'51	7387	2004	4609	38847	5049	8261	1555	3822	12113	8813	1983	37209	16283	10255	7726	7032	7794	2555	9016	16419	28407	12139	4861	15635	2126
	'50	7411	2624	4590	42632	5434	8316	1472	3624	12745	8829	2278	37137	16288	10731	8214	7549	8436	2581	9091	16914	27309	13232	4724	17262	2147
	'49	7029	2740	4102	40951	5420	8016	1494	2952	11978	7419	2165	35613	14638	11314	8122	7621	7614	2577	9169	16340	24468	12761	3768	15115	2108
	'48	5829	1686	2533	27238	3179	4631	938	1861	6588	5709	1291	20782	9587	6492	5052	5035	5474	1747	5654	10487	14152	7489	3093	9208	1260
	'47	4213	1721	2130	25021	3204	4574	881	1406	6361	4839	1275	18468	9276	6576	4724	4741	4325	1644	5425	9796	12796	7100	2435	8109	1222
	'45-'42	3212	1092	1618	16338	2102	3268	533	795	4336	3214	824	12250	6422	4058	3101	3574	2873	1041	3744	6895	7874	4818	1645	5880	758
	Before '38	4369	701	541	9040	794	1486	244	269	1756	1397	391	3393	2418	1513	1286	1477	1111	429	1290	2571	2167	2069	575	2344	283
	'41	4369	2114	1773	35376	2957	6918	903	901	7379	4846	1287	14512	10564	9538	4435	5776	3868	1912	5950	13332	10706	6608	1913	10173	1067
	'40	2530	1459	1081	27865	2068	5027	563	942	4808	2732	979	9877	7150	3965	2961	3725	2131	1363	3872	8720	6375	5309	1164	7671	778
	'39	1482	940	663	19060	1561	4131	429	373	3225	1798	683	6043	3859	2664	1999	2436	1332	946	2596	6559	3649	3711	700	5843	481
	'38	949	492	353	11331	767	1832	201	143	1438	729	381	2856	2258	1495	1184	1273	774	533	1221	2645	1544	2223	300	3197	314
	'37	976	646	492	17462	1577	2651	249	197	1917	1006	621	4233	3439	2014	1977	1943	826	726	1831	3383	3139	3050	467	4587	456
	Before '38	467	475	299	14902	899	1438	112	76	826	650	348	1994	2004	1278	1132	1091	484	416	917	1984	1245	1666	287	3404	338
	Unid.*	76	15	24	395	10	16	42	64	487	470	15	648	107	66	61	111	95	9		34	878	40	102	52	1
	Total	63541	25871	25744	422174	45489	81079	12753	20871	104338	73154	19078	291908	149228	90575	69466	68229	66838	29054	79871	154285	216018	109645	37300	144672	18987
PONTIAC	'54	2052	531	1021	10580	1179	2908	499	932	3296	3273	516	11807	3911	2379	2060	1967	2653	929	2217	9390	13241	2748	1144	3783	442
	'53	5030	1750	2846	29954	3307	6201	1360	1960	9229	7564	1355	26532	12060	6743	5251	5050	5982	1651	5639	11587	30505	7879	3003	8536	1248
	'52	3474	1338	1952	21681	2352	3738	905	1293	5619	4779	1095	16386	7670	4102	3685	3342	4156	1023	3512	7021	17273	4952	2204	5350	1014
	'51	4485	1766	2303	30085	3370	5404	1230	1653	6963	6185	1474	22452	10604	6009	5034	4505	5013	1410	4813	9792	25563	7020	2484	7364	1378
	'50	6274	2144	2736	36234	4287	6707	1576	2206	10173	6708	1623	27793	12615	7770	6968	5365	6027	1858	6969	12427	23139	9324	3007	9740	1608
	'49	3265	1488	1645	25694	2769	5367	830	1385	6864	4123	1215	18262	8225	4589	3959	3593	3797	1460	4065	9390	13561	5659	1929	6630	1094
	'47	2160	994	1110	17253	1975	4412	699	729	3726	2446	692	11808	5096	3254	2809	2856	2060	1395	3035	7310	10404	4054	1133	4219	806
	'45-'42	1375	627	691	10581	1083	2645	386	437	2131	1423	362	6491	3433	1748	1440	1636	1154	858	1777	4154	5479	2305	675	2563	496
	Before '38	605	326	256	5461	540	1089	179	92	881	653	219	1893	1243	708	696	828	547	375	673	1765	1653	991	390	1222	184
	'41	2211	1233	964	24985	1921	4719	963	479	3444	2075	722	8653	4754	2506	2597	3057	1779	1556	2642	7985	6102	3806	1082	5082	430
	'40	1084	625	605	15770	1038	3160	382	283	2066	1162	415	4363	2576	1642	1278	1621	774	1043	1814	4578	3509	2112	579	3173	237
	'39	711	300	300	8443	530	1908	214	158	1147	632	186	2323	1224	1039	788	931	476	652	948	2654	1614	1289	341	1883	107
	'38	292	191	136	4707	279	791	111	54	576	246	97	1047	646	535	468	434	229	348	397	1145	709	694	142	1000	74
	'37	466	321	233	8819	605	1647	173	92	911	410	236	2083	1513	991	896	790	260	550	711	2056	1773	1457	220	1809	166
	Before '38	132	129	76	4415	239	549	57	26	301	114	102	619	565	385	353	257	67	207	236	624	529	527	71	787	74
	Unid.*	90	96	63	2594	249	455	48	26	204	124	67	495	459	342	303	202	78	167	116	397	430	475	69	661	69
	Total	28	8	13	230	6	12	28	30	309	285	10	370	58	46	54	67	72	3		39	526	29	52	25	
		38299	14974	16166	284582	27740	58089	9796	12960	62790	45254	11479	175417	84435	49277	40639	39562	37658	16949	41671	90731	162256	58788	19959	69896	9883
STUDEBAKER	'54	354	192	202	4379	287	700	97	178	1224	719	225	3117	2311	694	907	637	909	325	630	1363	1891	903	221	792	212
	'53	1834	910	929	15114	933	2279	510	501	3482	2361	751	9288	7702	2442	1689	2132	2399	657	2071	4109	7797	2856	1071	3080	697
	'52	2226	1038	1288	16799	1328	2442	734	615	3804	2774	1056	9923	6970	2888	2248	2132	2758	656	2353	4129	7447	3858	1608	3343	894
	'51	3384	1561	1738	24763	2183	3715	1052	800	5227	3874	1568	14628	11311	4447	3496	3060	3871	900	3258	5882	9863	5583	2033	4868	1252
	'50	4158	2337	2019	36322	2824	4550	1383	1173	7056	4394	1929	18609	14705	5292	4343	3622	5153	1212	4057	8457	11683	7859	2233	6595	1700
	'49	1420	847	713	16787	1050	1985	529	466	2773	1633	657	6810	4307	1965	1544	1320	1656	500	1987	3023	3960	2626	726	2433	609
	'48	1818	1323	782	20815	1433	2638	469	763	3429	2133	905	9134	6675	2794	2202	1670	1942	656	2252	4210	5679	3504	861	3470	807
	'47	1492	917	554	16188	1432	2136	271	510	2826	1538	730	7404	6016	2527	2006	1483	1514	544	1781	3074	4240	3057	572	2824	605
	'45-'42	198	96	86	3619	161	262	67	36	320	214	93	742	618	263	189	161	195	70	286	409	416	276	100	338	76
	Before '38	270	176	96	3954	267	351	56	45	455	291	182	1063	807	466	299	262	333	89	286	548	420	693	114	866	165
	'41	645	469	231	11310	689	1056	171	146	1273	632	488	2516	2098	1251	726	575	888	244	838	1669	1103	1660	213	1812	356
	'40	334	262	165	8091	482	621	107	87	747	322	274	1309	1156	654	408	337	342	134	535	790	518	995	122	1193	236
	'39	169	169	63	5622	235	393	58	58	472	179	146	806	661	496	226	196	123	106	328	610	332	616	56	759	157
	'38	84	84	23	2366	100	145	9	25	128	58	58	317	268	177	115	64	58	37	124	189	99	269	16	216	57
	'37	99	92	34	2554	153	309	20	24	194	84	93	466	421	221	177	109	84	66	223	384	202	372	29	360	80
	Before '38	23	42	13	1729	63	88	8	9	90	36	24	154	104	111	66	48	16	33	62	81	64	135	9	140	29
	Unid.*	29	53	13	1739	90	122	10	5	77	57	34	170	177	136	90	46	37	45	52	97	89	215	21	176	41
	Total	30	7	10	133	3	3	9	19	168	151	10	169	55	29	14	41	44	2		13	199	13	26	19	
		16220	10880	8630	191415	13089	23883	5691	5466	33715	21440	9429	86588	69681	26791	20606	17897	21680	8270	21113	38960	56522	33610	10030	33089	8922
WILLYS	'54	58	52	28	580	153	154	9	17	314	30	75	469	141	54	37	72	96	105	170	354	221	98	33	110	43
	'53	646	317	316	4788	648	1192	79	175	2067	579	574	2562	1179	545	399	705	526	594	726	1394	2218	834	289	656	376
	'52	679	265	371	4881	569	780	67	158	1726	614	523	1619	917	311	416	607	568	363	638	964	1484	437	362	676	380
	'51	396	194	401	5729	681	738	5	107	1804	381	559	1452	840	307	279	632	576	359	440	1015	844	431	299	570	301
	'50	420	265	360	2774	580	838	29	125	2084	383	375	1706	816	375	286	791	645	311	568	1101	1001	418	300	927	240
	'49	366	212	303	2274	570	886	20	79	1562	342	370	1685	773	496	351	965	754	271	519	941	949	400	357	1002	265
	'48	430	153	316	3396	1022	783	16	76	1903	422	791	2695	944	1155	825	1919	1141	475	819	927	1707	963	823	1670	221
	'47	373	93	491	3296	944	827	21	68	1804	270	513	2133	792	1071	394	1326	867	497	426	792	1823	719	827	1518	263
	'45-'42	168	60	262	3433	476	982	24	36	1036	60	213	1582	510	634	267	721	454	302	314	710	1540	538	307	939	96
	Before '38	224	186	131	2777	201	219	27	11	613	67	196	339	192	196	144	308	225	147	117	270	289	122	191	358	62
	'41	153	89	63	2329	63	99	16	11	279	102	79	391	179	119	66	198	94	47	93	179	198	118	73	182	31
	'40	136	99	43	1703	73	109	10	4	303	82	44	181	83	79	114	83	47	80	141	185	102	44	186	25
	'39	32	21	10	796	23	36	6	0	104	21	13	31	54	14	24	25	32	15	14	49	33	27	11	60	4
	'38	16	18	10	807	16	22	2	2	109	20	11	99	43	27	35	21	32	9	11	45	32	47	8	74	10
	'37	25	62	16	1496	68	61	3	2	188	27	14	189	123	31	48	31	21	12	29	46	80	66	14	138	29
	Before '38	6	10		432	6	7	1		29	4	2	17	1	2	5	3			4	3	9	11	3	9	3
	Unid.*	14	4	7	778	36	42	2	1	86	12	12	69	47	49	39	22	14	15	17	26	39	188	9	86	14
	Total	14	4	7	47	7	11	1	4	115	20	4	91	11	18	6	36	44	4	2	10	149	6	21	13	1
		4194	2296	3677	38186	6830	6792	348	982	15629	3361	4327	17199	7547	5643	3406	9458	6175	3803	4879	8948	12827	5454	3371	9318	2256

Unid.*—Unidentified as to model year.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Cars in Use by Makes, by Model Year, see page 118

AND MODEL YEAR—*continued*

Model	Yr.	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
PACKARD	'54	106	21	30	826	19	1380	154	36	536	71	99	1641	47	45	38	136	249	80	38	234	295	96	229	27	12688
	'53	366	197	201	4178	262	8867	1384	231	5879	631	899	7633	423	626	316	964	2990	354	160	1204	1090	920	1620	156	61088
	'52	356	137	156	2817	290	5554	1054	224	3535	570	644	4781	235	508	238	653	2856	374	133	1154	845	699	1096	170	38022
	'51	241	207	216	4050	376	8136	1367	375	5835	638	1344	7335	412	796	526	1108	3456	486	236	1342	1668	947	2099	153	56574
	'50	538	111	190	2730	387	6207	1096	252	4515	723	863	5270	312	488	413	731	2424	387	176	1303	1121	696	1729	170	44743
	'49	674	138	260	3163	353	8485	1360	286	5571	920	1065	7125	322	616	503	939	2823	387	260	1689	1472	881	2080	233	62426
	'48	443	106	278	3117	226	8868	907	129	4734	742	1040	6962	329	474	281	781	2513	315	178	1222	1468	852	1555	188	75044
	'47	221	70	136	1565	129	3981	486	81	2202	371	388	2782	175	243	96	425	1100	190	106	594	816	336	696	40	34439
	'46	168	53	103	1230	104	2757	387	40	1594	286	356	2124	166	199	70	318	859	125	70	455	565	256	494	42	25948
	'45-'42	96	38	39	568	37	1202	180	18	733	175	265	1134	113	114	15	210	380	78	49	137	434	137	280	33	14598
	'41	136	93	165	1385	91	2732	396	27	1464	303	529	2687	248	257	36	382	685	157	105	599	967	350	495	37	31014
	'40	186	83	130	1529	97	3080	415	37	1370	285	500	2678	195	280	41	371	705	150	124	612	917	342	487	50	31300
	'39	80	30	46	634	30	1367	166	9	506	139	194	1129	100	143	16	133	292	64	45	249	323	153	214	22	13625
	'38	76	21	32	400	29	990	166	13	353	71	188	845	60	65	23	82	160	55	29	139	228	107	173	14	9232
	'37	101	43	94	899	49	1723	171	14	779	122	217	1421	161	145	34	126	296	66	65	188	488	169	279	23	16363
	'36	25	11	19	166	13	513	34	5	206	43	80	399	29	25	6	29	63	29	10	86	130	43	126	7	5236
	Before '36	33	12	23	258	14	392	24	4	174	33	61	344	37	14	11	23	49	22	14	46	105	29	41	5	4185
	Unid.*	2	3	5	61	2	40	6		58	2	4	147		6	3	35	86				19	2	5	1	1047
	Total	4365	1430	2125	29234	2431	66540	9675	1763	40498	6141	9173	55666	3370	4960	2641	7350	21910	3266	1819	11120	12732	6814	13613	1472	349226
PLYMOUTH	'54	2170	375	871	12966	981	31388	4795	1394	13904	1949	2564	22329	1298	2266	921	5117	12598	742	822	4426	4610	2302	5707	426	272631
	'53	4894	679	1795	19655	2494	50563	11856	2745	34702	7376	5690	44881	2614	5496	2646	10377	30587	1949	1307	11341	7712	5660	12898	1196	376574
	'52	3284	525	1172	11087	1579	27928	6704	1729	19611	5413	3867	25536	1577	3259	1538	5478	18583	1373	826	8131	5631	3064	7137	795	239690
	'51	5531	706	1549	18861	2164	48523	10320	2637	32412	7205	5617	41219	2698	5022	2542	9922	27023	2038	1160	11281	7717	6029	12336	1190	343026
	'50	5457	685	1567	18662	2327	46699	10465	2555	33684	7539	6316	41219	2905	4862	2535	9587	25892	2205	1202	11181	8807	5196	12729	1224	340202
	'49	5759	671	1562	18550	2149	45687	10083	2607	34035	6707	6448	41342	2886	4559	2677	8559	26310	2430	1129	10845	8673	5496	12709	1286	331749
	'48	3580	482	1170	10706	1249	25737	5749	1810	20493	4481	3870	22766	1884	2757	1913	5856	16853	1536	719	7402	5429	3612	7096	783	323352
	'47	3666	429	989	10752	1265	25694	5878	1575	20486	3851	3465	22045	1726	2645	1954	6189	15406	1427	884	6630	5133	3713	6967	663	304982
	'46	2303	260	677	7055	949	17542	4140	1007	13383	3006	2192	15147	1219	1827	1133	3616	10588	940	486	4492	3277	2987	4650	441	205254
	'45-'42	827	133	218	2788	290	6305	1695	384	4647	904	1330	4904	548	948	377	1311	3267	481	141	1306	2200	1052	1659	146	78389
	'41	2794	502	1110	11916	989	28056	6776	1171	20061	3420	5065	23877	2607	3856	1201	5376	11329	1548	740	6256	7759	4474	6870	822	323125
	'40	1773	332	850	7962	613	19718	3852	697	13806	2406	3557	16007	1774	2167	814	3067	8619	1087	491	4539	5299	2931	5282	380	220720
	'39	1410	208	642	5520	392	14040	2779	480	8161	1562	2410	10880	1481	1567	564	1906	4106	732	328	2545	3631	1950	3510	233	148210
	'38	761	140	299	2526	197	7142	1121	257	3475	1060	1210	5096	492	596	335	892	2416	333	207	1395	1929	908	1887	113	74915
	'37	1069	221	461	3323	284	8288	1566	322	6349	1312	2522	8672	977	895	496	1320	2976	616	263	1416	3025	1365	2858	192	112018
	'36	644	134	262	1611	168	4617	813	199	4070	782	1483	5072	456	504	253	681	1780	376	200	955	2209	1019	1676	129	67915
	Before '36	768	136	259	1710	163	3499	967	276	3737	843	1442	4294	356	548	296	677	1517	321	190	938	1675	981	1478	162	66348
	Unid.*	38	12	37	297	8	175	12	4	253	73	29	890	12	29	30	277	472	3	6	35	75	2	47	2	6626
	Total	47080	6530	15620	165067	16170	408607	88701	21811	298330	59928	59000	396150	27619	43430	22129	78092	221392	29036	10974	95114	94783	51702	107277	9846	4737023
PONTIAC	'54	1539	208	758	8021	858	18970	2958	491	9253	1896	1060	11249	956	1364	486	2448	9483	884	406	3062	2857	1040	3738	301	104770
	'53	3275	625	1311	19851	1774	38545	8083	1323	26325	4762	3651	25713	1845	3889	1163	5997	20665	1586	792	6646	4382	3486	10001	851	268269
	'52	2176	445	872	9746	1303	22319	5559	963	16018	3631	2887	15848	1052	2694	875	3862	15233	1332	471	4405	3400	2033	5250	673	253393
	'51	3242	570	1030	13983	1617	30833	7108	1324	23282	4319	3953	21962	1544	3382	1357	5429	18817	1922	677	5675	5198	2837	7770	947	343168
	'50	3887	733	1398	16845	1857	37307	8640	1440	27611	5880	4963	28726	1934	3776	1683	6708	22673	2403	946	7061	6748	3359	9676	925	421171
	'49	2417	469	1045	13482	1046	29895	5311	1000	19670	3746	3310	17475	1503	2318	1127	4065	12340	1682	650	4736	4824	2226	6857	606	284790
	'48	1997	332	855	9717	788	22068	4248	812	15894	2803	2517	13869	1176	2222	976	3614	9256	1239	554	3853	3601	1819	5141	386	219392
	'47	1761	304	837	9390	729	19917	4285	593	14648	2669	2816	13235	1263	1999	869	2884	8156	1068	526	3430	3502	1844	4649	317	198642
	'46	940	174	498	5514	365	11692	2520	356	8306	1421	1609	8010	731	1279	454	1772	4347	563	327	1901	2279	1102	2669	200	113631
	'45-'42	407	90	178	1903	179	3702	1104	145	2488	648	886	2491	338	642	167	841	1647	302	124	880	1279	572	1124	84	48432
	'41	1364	312	748	7967	527	16787	3934	397	10262	2573	3425	10713	1571	2306	909	2616	6316	1087	488	2764	4442	1888	4510	298	179814
	'40	763	167	502	5633	263	11003	2228	187	8851	1499	2045	6965	918	1018	247	1349	2477	619	343	1795	2986	1333	2851	132	108837
	'39	477	86	336	3266	134	6722	1064	117	3048	905	934	3625	584	575	167	715	1286	213	213	1011	1251	629	1484	74	56631
	'38	253	42	141	1276	53	3323	463	60	1399	451	527	1564	213	223	100	282	712	136	67	390	631	291	622	34	28008
	'37	512	90	303	2112	96	4527	648	116	3638	788	1099	3346	356	348	174	474	904	295	176	861	1474	522	1773	89	53027
	'36	225	42	101	622	38	1353	180	40	1160	353	405	1010	139	113	64	153	355	93	59	226	443	174	636	32	16420
	Before '36	193	29	83	606	33	1283	170	66	700	218	206	962	99	117	46	99	342	45	51	167	287	124	472	31	14834
	Unid.*	34	11	27	213	8	123	6		188	35	16	481	7	17	10	141	282	1	2	23	60	1	21	7	2068
	Total	25453	4728	11013	126247	11466	280389	58482	9342	198822	38696	36337	183843	15769	28269	10481	43899	134296	15289	6969	48746	48151	25338	69450	5879	2908485
STUDEBAKER	'54	390	226	219	1635	174	3156	494	122	1787	353	501	2250	191	156	167	505	1766	106	91	696	952	219	902	45	49133
	'53	1164	301	486	5235	764	11636	2452	542	8677	1595	1663	8651	901	1183	549	1956	7061	569	235	2519	2161	1012	3614	247	143230
	'52	1532	404	430	5245	1004	12556	3183	748	9353	2004	2136	10204	727	1483	711	2463	9368	853	286	2962	2771	1211	3889	346	160273
	'51	2418	441	633	7964	1406	17225	4477	941	13467	2628	3425	14521	987	2130	1093	3522	12996	1448	367	3867	4742	1674	6056	499	232621
	'50	2795	803	859	10385	1963	22466	5221	1159	17274	3562	4050	17989	1533	2455	1327	4650	18464	2111	509	4719	6155	1934	7619	617	304071
	'49	987	263	380	4079	599	9210	1916	481	6156	1722	1831	8080	696	881	491	1647	5421	937	280	2964	2633	954	2916	301	116356
	'48	1439	362	483	5080	699	12409	2849	562	8721	1650	2763	10753	856	1132	629	1961	7326	1167	324	2478	3670	1216	3550	342	155081
	'47	1304	222	332	4269	584	9731	2066	467	7071	1566	2064	8113	712	903	571	1865	6213	799	294	1632	2903	981	2936	268	123862
	'46	165	23	44	573	56	1156	218	53	821	334	281	976	83	128	66	204	644	78	70	485	434	138	295	29	16709
	'45-'42	239	48	47	537	66	1082	325	83	828	233	679	1126	124	138	85	275	806	192	27	229	618	229	503	48	21288
	'41	647	131	147	1623	168	3338	613	193	2429	639	1635	3378	390	390	222	685	1870	508	88	809	2357	653	1509	188	57561
	'40	313	75	99	971	103	1916	429	91	1390	361	679	2630	196	253	151	344	988	308	48	824	1261	414	662	85	34324
	'39	217	53	50	565	54	1311	216	62	901	233	536	1622	150	134	71	161	600	234	32	287	999	266	602	34	22314
	'38	96	25	20	216	27	533	80	21	312	94	224	668	38	58	39	67	234	72	14	116	312	102	232	12	8360
	'37	131	26	29	363	19	738	133	33	562	116	353	1132	73	98	48	160	325	119	19	63	547	187	390	17	12175
	'36	53	19	16	90	9	219	17	11	230	54	163	239	22	22	19	32	87	38	2	55	292	41	156	17	5040
	Before '36	117	18	25	230	12	506	22	28	237	99	118	341	21	37	31	24	164	28	29	57	214	46	143	29	6001
	Unid.*	17	6	7	98	4	49	7	1	63	16	11	201	9	3	19	90	189	1		15	33		8	1	1097
	Total	13869	2336	4290	48963	7685	109083	24805	5612	90316	17221	23310	92668	7589	11491	6261	29253	74516	9563	2575	24726	33828	11244	36432	3107	1483637
WILLYS	'54	76	22	77	235	55	686	90	15	269	9	163	479	6	19	19	77	170	73	79	116	227	90	164	57	4685
	'53	263	176	383	2139	353	5763	1190	124	3580	164	948	3219	175	425	164	639	1288	329	402	987	844	633	926	307	49585
	'52	331	110	256	1897	308	3943	1212	121	2534	239	976	2796	138	404	167	616	1611	340	297	862	726	534	886	231	40542
	'51	252	88	197	1317	335	3257	433	109	1922	68	651	2329	100	267	134	532	1520	294	205	810	714	315	443	342	32930
	'50	204	83	200	1509	365	3362	676	129	1910	132	992	3819	175	299	99	660	1690	193	126	635	892	444	467	283	36663
	'49	315	56	150	1276	271	2705	673	149	1880	203	996	1888	133	341	108	765	1948	177	212	690	791	515	449	226	32567
	'48	533	67	164	1081	419	2930	463	449	2661	178	827	2672	143	239	99	1208	2580	236	357	1095	836	265	644	277	45664
	'47	385	64	148	986	383	2200	319	325	2184	134	476	2088	125	160	64	874	1670	247	268	980	779	217	511	281	37106
	'46	226	64	116	821	244	1753	90	182	1795	68	195	2092	104	38	17	489	1012	130	334	679	441	44	236	147	26701
	'45-'42	92	52	51	365	177	869	51	52	815	114	284	887	71	22	15	291	580	105	65	291	516	48	81	57	12858
	'41	46	22	16	196	34	452	114	48	356	62	254	724	62	6	21	101	289	54	9	85	335	60	102	17	6370
	'40	29	11	24	200	22	362	65	17	416	77	217	469	26	24	22	105	182	20	17	88	228	70	166	6	6863
	'39	11	5	6	90	6	146	27	5	67	28	66	44	4	15	10	21	49	5	5	16	42	20	30	3	2155
	'38	18	2	6	46	4	110	18	11	80	22	47	87	8	16	6	6	54	6	6	21	38	9	29	1	1039
	'37	27	13	6	84	13	180	38	5	232	48	88	128	4	16	11	20	77	11	6	38	104	36	66	9	3704
	'36	3	1	3	11	3	22	3	2	39	6	31	13	1	4	2	3	9	1	1	1	30	2	3		709
	Before '36	68	6	15	57	3	117	14	25	124	21	62	116	10	14	16	21	43	3	6	26	63	22	80	1	2502
	Unid.*	22	3	5	47	4	34	13	3	76	8	4	209	2	2		40	58	1	4	9	16	1	4		1209
	Total	2918	847	1810	11898	2999	28909	6053	1827	20829	1999	6934	22471	1294	2278	976	6367	14938	2293	2942	6736	7699	3285	6063	2336	347921

Unid.*—Unidentified as to model year. Data from the Reuben H. Donnelley Corp. are as of July 1, 1954.

For Summary of Trucks in Use by Makes, by Model Year, see page 119

• TOTAL REGISTRATIONS •

CARS IN USE BY MAKES, STATES,

Model	Yr.	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D.C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
ALL OTHERS	'54	66	62	27	4662	75	410	33	77	586	181	24	2212	151	90	111	96	119	37	174	841	342	79	38	104	25
	'53	100	212	92	12041	190	903	106	237	1636	405	96	1112	442	148	122	155	293	100	283	1209	994	347	125	286	46
	'52	226	283	85	16997	294	911	136	238	1751	381	115	1161	387	111	132	172	323	106	360	1254	764	163	146	345	49
	'51	283	294	99	7435	257	1175	136	334	2033	521	91	2721	496	166	176	291	302	128	483	1412	944	177	136	488	45
	'50	223	132	105	4419	202	816	102	221	1710	495	88	929	288	147	136	170	347	106	347	966	719	223	141	389	43
	'49	201	103	104	3471	139	448	45	126	886	413	70	679	495	236	202	174	364	102	293	724	784	170	160	451	41
	'48	349	208	147	4064	208	1028	83	185	1241	487	126	1679	990	362	420	429	467	169	560	1265	1225	317	220	668	74
	'47	171	94	71	1494	122	289	81	53	737	243	64	402	429	131	129	239	183	66	236	284	455	170	124	366	39
	'46	58	7	32	366	25	82	14	7	171	116	8	139	91	46	22	82	82	19	62	96	113	32	66	68	7
	'45-'42	32	17	11	193	16	35	10	11	98	66	13	54	49	23	11	21	25	21	41	59	45	34	32	24	7
	'41	33	29	17	247	36	77	9	13	162	120	14	121	91	55	38	48	37	13	38	97	129	61	32	62	8
	'40	36	12	12	286	37	49	9	9	147	102	10	104	81	40	16	38	23	27	38	75	95	23	31	66	5
	'39	10	29	13	375	38	64	13	7	145	73	15	99	69	31	21	30	20	25	41	83	81	64	10	67	5
	'38	10	22	6	310	21	31	7	6	80	34	7	58	38	31	9	24	9	14	14	45	43	38	11	28	4
	'37	6	22	13	881	44	73	4	6	77	46	10	126	96	64	43	33	15	20	46	72	101	65	10	48	10
	'36	10	21	7	439	38	53	1	6	49	31	10	81	63	47	21	10	7	13	35	50	82	44	9	51	14
		50	74	29	2139	170	407	30	36	133	102	37	367	257	209	142	70	44	107	172	277	280	340	42	310	59
		130	20	103	870	122	100	9	7	287	100	40	900	279	179	13	242	316	27	483	259	387	19	314	16	19
	Before '36	2090	1091	975	52479	2037	6929	804	1674	11618	3945	834	12054	4915	2171	1850	2190	2945	1094	3612	8864	7533	2566	1647	4071	482
	Unid.*																									
	Total	842672	250802	323668	4438864	466899	716188	129468	166870	1037837	764522	286950	2837240	1298445	851586	696821	940680	921188	221884	636089	1771188	2292778	997390	352718	1226236	180251

Passenger Cars in Use by Makes and by Model Year

(As of July 1, 1954)

Model Year	Buick	Cadillac	Chevrolet	Chrysler	De Soto	Dodge	Ford	Hudson	Kaiser-Frazer-Henry J	Lincoln	Mercury	Nash	Oldsmobile	Packard	Plymouth	Pontiac	Studebaker	Willys	All Others	Total
1954	225,809	48,160	645,931	62,371	45,130	96,329	592,658	22,886	3,546	19,106	135,672	39,714	105,506	12,658	272,631	164,770	40,133	6,666	15,719	2,620,394
1953	456,770	98,732	1,296,419	164,133	122,067	291,881	1,163,078	38,252	36,700	37,427	287,529	113,302	312,723	81,085	578,674	395,269	143,239	49,586	36,886	5,717,841
1952	286,884	63,301	797,511	87,992	81,461	214,213	629,861	64,020	50,477	24,929	161,599	133,032	196,085	58,022	339,860	253,363	100,273	40,542	33,240	3,866,425
1951	377,471	90,720	1,177,005	135,350	96,196	256,292	943,056	117,360	104,941	28,930	285,092	203,815	265,224	88,574	533,029	343,168	232,021	32,930	34,900	5,443,347
1950	626,900	96,214	1,321,815	162,226	124,803	322,885	1,161,486	112,886	19,533	26,509	276,846	155,209	301,231	64,743	550,202	421,171	304,071	35,963	26,527	6,179,660
1949	298,335	63,000	986,190	130,965	102,102	278,442	1,008,140	139,902	85,873	61,168	265,930	116,389	263,030	62,426	531,749	284,798	118,355	32,567	19,355	4,800,490
1948	192,394	46,854	677,710	98,523	77,632	196,279	229,909	92,673	115,883	7,070	45,607	93,685	153,676	75,044	323,382	219,392	185,081	45,664	34,103	2,884,520
1947	219,762	51,563	623,568	87,773	67,396	204,657	368,330	63,193	92,926	13,965	73,031	80,420	162,448	34,439	304,982	198,642	123,982	37,106	12,274	2,521,467
1946	119,709	23,623	388,584	61,276	50,923	134,972	280,128	56,322	.....	9,116	66,859	68,690	92,536	25,646	205,254	113,831	76,709	26,701	3,301	1,822,273
'45-'42	43,232	10,948	167,293	17,252	12,327	36,931	106,136	12,412	.....	2,314	13,106	11,927	28,421	14,588	79,389	45,432	21,265	12,958	1,995	640,824
1941	192,772	44,366	686,380	87,979	53,176	132,100	401,350	29,304	.....	7,103	48,077	36,330	134,535	31,014	323,125	179,914	67,561	8,370	3,356	2,461,832
1940	148,174	19,233	478,320	46,968	34,190	108,782	289,290	20,383	.....	5,554	36,419	19,084	88,116	21,380	220,728	108,637	34,324	6,803	2,709	1,691,402
1939	72,451	13,704	363,579	28,352	21,549	73,539	184,557	6,919	.....	3,097	28,706	16,700	46,085	13,625	148,219	69,631	22,314	2,155	2,663	1,015,219
1938	48,039	6,365	179,020	13,509	10,488	33,657	71,961	4,743	.....	1,617	.....	8,146	22,465	8,232	74,916	28,008	8,390	1,639	1,599	516,939
1937	49,461	6,402	217,554	17,409	14,015	63,948	111,741	9,297	.....	1,977	.....	16,573	40,701	16,363	112,016	53,027	12,175	3,704	2,898	746,447
1936	22,100	2,859	130,911	6,530	4,883	40,939	103,391	4,658	.....	719	.....	3,953	23,021	5,236	67,915	19,429	5,048	760	2,098	444,275
Earlier	15,259	2,916	134,928	8,133	4,722	29,881	376,196	4,917	.....	986	.....	3,757	13,903	4,185	85,345	14,834	6,001	2,502	10,579	898,842
Unid.*	4,241	1,042	15,993	1,836	1,247	3,499	13,083	1,195	4,594	433	3,669	1,941	3,494	1,047	6,626	3,589	1,997	1,269	16,343	85,767
Total	3,388,489	740,824	10,224,218	1,207,498	924,131	2,525,884	8,104,662	823,454	696,542	262,511	1,721,238	1,101,467	2,408,368	649,228	4,737,023	2,908,495	1,463,537	347,921	288,643	44,387,113

Unid.*—Unidentified as to model year. Data from The Reuben H. Donnelley Corp.

Passenger Cars in Use by Make*

(As of July 1, 1954)

Rank	Make	Number in Use	% of Total	Rank	Make	Number in Use	% of Total
1	Chevrolet	10,224,218	23.04	12	De Soto	924,131	2.08
2	Ford	8,104,662	18.26	13	Hudson	823,454	1.86
3	Plymouth	4,737,023	10.67	14	Cadillac	740,824	1.67
4	Buick	3,388,489	7.63	15	Packard	649,228	1.46
5	Pontiac	2,908,495	6.56	16	Kaiser	696,542	.67
6	Dodge	2,525,884	5.69	17	Willys	347,921	.78
7	Oldsmobile	2,408,368	5.41	18	Lincoln	252,511	.57
8	Mercury	1,721,238	3.88	19	Frazer	119,184	.27
9	Studebaker	1,463,537	3.30	20	Henry J	96,345	.22
10	Chrysler	1,207,498	2.72	21	All Others	298,643	.68
11	Nash	1,101,467	2.48		Total	44,387,113	100.00

* Based on data from the Reuben H. Donnelley Corp.

AND MODEL YEAR—*concluded*

Model	Yr.	Neb.	Nev.	N.H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
ALL OTHERS	'54	18	61	61	637	54	2569	104	5	378	92	186	353	79	94	37	70	388	23	27	209	306	24	186	16	18719
	'53	46	123	114	1402	146	6777	238	29	1363	130	564	223	212	232	79	211	1186	70	57	564	976	66	371	33	36695
	'52	86	80	124	1326	101	3641	384	27	1148	187	629	387	191	325	80	353	1334	101	73	748	903	119	290	29	33240
	'51	68	66	127	1483	207	4531	501	16	1241	147	702	744	160	462	70	411	1274	73	66	797	1070	147	294	23	34599
	'50	53	35	100	1295	104	3966	474	31	1233	146	541	432	169	296	78	403	1403	70	61	646	1012	177	223	35	26827
	'49	47	21	83	984	142	2323	274	21	961	153	254	488	103	192	70	294	1277	84	69	399	464	108	307	27	19388
	'48	136	32	138	1799	176	4632	545	45	1866	263	614	938	210	336	97	541	2306	100	83	807	826	307	486	53	34163
	'47	51	18	39	656	66	1663	218	30	637	107	166	416	41	151	60	208	747	12	11	308	153	144	116	22	12274
	'46	11	6	16	186	31	249	84	12	262	46	43	91	10	89	15	88	236	6	7	124	58	29	40	13	3301
	'45-'42	13	9	10	146	19	199	43	3	78	16	27	88	12	21	6	95	141	4	2	113	45	8	45	4	1986
	'41	16	13	21	141	23	223	69	4	226	30	67	152	28	27	23	44	267	8		42	157	14	93	12	3356
	'40	17	4	8	162	22	204	37	15	187	23	69	102	13	30	16	61	188	2	3	45	82	14	46	10	2709
	'39	12	10	16	94	11	218	29	17	195	31	57	130	16	15	13	45	196	3	3	58	81	28	67	9	2053
	'38	10	3	5	57	5	128	19	6	81	15	50	73	6	15	2	17	73	6	3	36	43	18	23	2	1599
	'37	14	29	22	90	11	210	33	14	204	13	58	105	11	21	15	38	81	16	6	42	100	27	60	9	2006
	'36	15	11	12	73	5	122	10	11	125	25	58	177	8	8	7	19	54	9	2	27	64	14	30	9	2096
		218	22	37	494	58	925	76	45	845	145	266	673	56	53	68	71	256	36	32	110	306	79	240	10	10679
		161	9	119	731	91	879	204	4	667	69	186	5328	9	7	37	185	811	1		28	887	6	224	15	15343
Before '36		957	582	1045	11040	1432	32063	3287	333	11965	1648	4488	10894	1331	2313	744	3874	12089	617	316	5031	7256	1499	3084	336	209643
Unid.*																										
Total		454989	70626	14834	1514496	198941	3533368	928793	188816	2525353	644834	579584	2612286	234886	511253	285516	714015	2322548	223876	96531	709481	992806	417434	1082024	105436	4587113

Trucks in Use by Makes and by Model Year

(As of July 1, 1954)

Model Year	Auto-car	Brock-way	Chev-rolet	Dia-mond T	Divco	Dodge	Fed-eral	Ford	GMC	Inter-national	Mack	Pon-tiac	Reo	Studе-baker	White-Sterling	Willys	All Others	Total
1954	781	881	149,702	1,870	1,484	34,090	290	116,604	32,000	46,873	3,010	386	1,413	3,816	5,068	4,900	3,994	408,880
1953	1,412	2,086	281,049	3,163	2,686	63,267	570	237,137	64,119	89,197	6,114	1,297	3,192	24,484	10,886	14,407	6,072	842,041
1952	1,385	1,594	253,202	3,148	2,765	97,242	639	199,308	73,601	94,914	6,667	961	2,927	27,997	10,276	11,863	6,509	798,598
1951	1,535	2,197	351,948	4,119	4,037	86,794	941	246,497	88,703	92,961	9,080	1,547	2,943	32,853	11,677	21,798	7,553	966,514
1950	1,689	2,101	373,612	4,587	4,544	105,328	825	255,482	98,612	82,319	8,247	1,700	2,651	36,139	11,338	18,270	7,210	1,036,119
1949	1,304	1,349	310,837	4,027	3,660	103,720	711	184,194	65,621	69,666	5,520	1,386	2,036	29,107	6,963	21,151	6,637	860,347
1948	2,132	2,264	273,138	5,177	5,672	98,626	2,369	208,912	65,365	106,063	7,316		5,014	22,480	9,351	42,486	8,486	886,972
1947	3,413	3,031	176,016	7,371	8,065	69,067	3,213	143,630	37,275	86,209	9,587		6,476	32,109	10,474	18,753	9,515	664,221
1946	3,489	2,577	212,394	3,389	6,955	67,611	2,129	134,555	16,829	67,341	3,219		5,311	19,706	6,969	15,806	7,981	584,195
1945	1,553	1,286	22,306	1,914	1,990	13,839	844	29,694	7,256	19,430	3,167		1,563	2,606	4,312	1,661	2,486	114,916
1944	734	804	9,210	806	230	4,314	367	11,869	3,339	9,232	1,765		276	1,010	1,942	675	1,042	48,618
1943	117	48	1,828	165	119	1,373	226	6,182	1,601	2,476	257		117	357	646	1,063	517	17,074
1942	864	152	59,962	803	571	22,916	374	42,822	13,275	17,345	1,316		727	1,322	1,837	2,772	1,804	168,562
1941	1,316	1,021	118,676	2,360	2,126	47,217	372	91,747	22,052	46,532	4,196		619	3,306	3,545	1,360	3,231	349,594
1940	693	544	86,237	1,786	1,317	30,300	273	64,146	14,673	29,455	2,796		155	783	1,439	1,254	2,636	238,304
1939	566	471	89,940	1,329	1,068	24,586	194	43,535	9,456	21,063	2,048		171	630	957	433	1,628	166,497
1938	319	272	38,567	1,010	627	12,729	132	28,178	4,030	10,701	1,175		472	551	786	537	1,426	100,335
1937	391	273	55,994	1,388	112	20,672	195	43,052	9,966	15,136	1,063		508	1,163	1,042	470	2,277	154,414
1936	247	225	37,718	1,186	164	17,145	204	40,526	3,979	10,532	649		271	333	776	247	1,748	115,249
Before '36	521	272	46,667	1,472	142	15,140	366	126,573	2,303	11,367	2,525		1,296	694	1,405	457	6,865	215,870
Unid.*	143	72	6,883	272	158	3,067	93	7,716	2,041	3,461	336	1,646	226	643	433	663	5,676	35,050
Total	24,887	23,340	2,927,796	54,889	42,660	1,012,919	16,348	2,298,660	657,301	961,302	90,961	8,943	42,157	282,686	102,249	181,381	94,160	8,800,490

Unid.*—Unidentified as to model year. Based on data from The Reuben H. Donnelley Corp.

Trucks in Use by Makes

Arranged in Descending Order, as of July 1, 1954

Based on data from The Reuben H. Donnelley Corp.

Rank	Make	Number in Use	% of Total	Rank	Make	Number in Use	% of Total
1	Chevrolet	2,927,796	33.27	10	Diamond-T	54,889	.62
2	Ford	2,298,660	26.01	11	Divco	42,660	.48
3	Dodge, Plymouth	1,012,919	11.51	12	Reo	42,157	.48
4	International	961,302	10.92	13	Autocar	24,887	.28
5	G.M.C.	657,301	7.47	14	Brockway	23,340	.27
6	Studebaker	282,686	3.21	15	Federal	16,348	.17
7	Willys	181,381	2.06	16	Pontiac	8,943	.10
8	White, Sterling	102,249	1.16	17	All Others	94,160	1.06
9	Mack	90,961	.91		Total—All Makes	8,800,490	100.00

EXPORTS

U. S. AUTOMOTIVE

U. S. Exports of New Motor Vehicles, 1920-54

In Units and Their Value

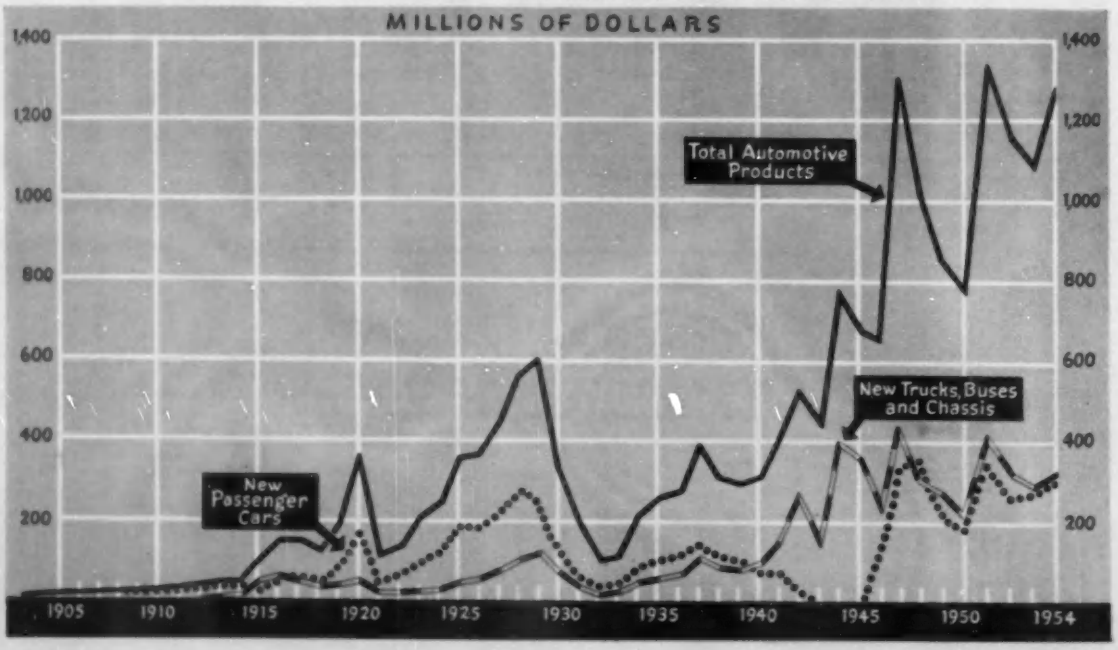
Compiled by Automotive Division, Business and Defense Services Administration, from records of the Bureau of the Census

Year	PASSENGER CARS Number	PASSENGER CARS Value	PASSENGER CARS % of U. S. Production (Units)	TRUCKS, BUSES AND CHASSIS Number	TRUCKS, BUSES AND CHASSIS Value	TRUCKS, BUSES AND CHASSIS % of U. S. Production (Units)	TOTAL MOTOR VEHICLES Number	TOTAL MOTOR VEHICLES Value	TOTAL MOTOR VEHICLES % of U. S. Production (Units)
1920	142,508	$165,255,921	7.5	29,136	$46,775,781	9.1	171,644	$212,031,702	7.7
1921	30,950	32,523,725	2.1	7,840	10,335,893	5.3	38,790	42,859,618	2.4
1922	66,791	51,649,816	2.9	11,443	8,270,708	4.2	78,234	59,320,524	3.0
1923	127,035	90,692,272	3.5	24,859	15,317,136	6.1	151,894	106,009,408	3.7
1924	151,380	112,534,729	4.7	27,352	19,199,344	6.6	178,732	131,734,073	4.9
1925	244,306	184,686,820	6.5	58,625	37,702,402	11.0	302,931	222,589,332	7.1
1926	238,540	176,432,157	6.3	66,880	47,176,107	21.1	305,420	223,608,264	7.1
1927	278,748	207,966,456	9.6	105,447	70,122,600	22.7	384,195	278,090,056	11.2
1928†	375,428	269,392,369	9.5	140,191	93,006,070	25.8	515,619	362,399,439	11.8
1929	346,630	239,324,000	7.5	197,872	112,607,985	25.6	544,502	351,941,985	10.1
1930	159,464	110,355,978	5.7	85,666	56,861,119	14.9	245,130	167,217,097	7.2
1931	86,437	52,851,585	4.3	49,415	26,210,975	11.8	135,852	79,062,560	5.6
1932	44,282	25,502,047	3.8	25,532	12,142,681	10.8	69,814	37,644,728	5.1
1933	67,355	33,945,464	4.2	44,102	20,691,338	12.7	111,458	54,636,802	5.8
1934	148,387	80,604,562	6.8	93,766	45,125,359	16.3	242,153	125,729,922	3.7
1935	179,470	99,342,411	5.5	100,668	51,996,928	14.4	280,138	151,338,349	7.0
1936	186,542	107,482,285	5.1	108,167	56,765,713	13.7	294,709	164,248,998	6.6
1937	237,719	140,638,203	6.0	169,076	102,889,939	18.9	406,795	243,528,142	8.4
1938	167,693	104,628,882	8.4	117,942	74,451,936	24.1	285,636	179,080,968	11.4
1939	143,969	87,171,300	5.0	116,913	71,422,015	16.4	260,822	158,593,315	7.2
1940	88,806	57,253,737	2.6	103,459	87,867,077	13.7	192,265	145,170,814	4.5
1941	81,746	60,792,648	2.4	147,132	148,148,880	13.9	238,878	208,852,528	5.0
1942	13,951	13,139,744	‡	156,344	258,241,290	19.1	170,295	271,441,042	....
1943	2,088	2,420,566	‡	74,847	146,772,105	10.7	76,935	148,192,611	....
1944	1,640	2,784,433	‡	175,000	399,795,242	22.8	176,729	402,579,675	....
1945	1,206	1,447,376	1.7	142,338	348,327,144	21.7	143,544	349,774,520	19.8
1946	116,994	122,500,568	5.4	167,980	225,929,505	17.8	284,974	348,430,073	9.2
1947	266,795	335,330,528	7.5	267,589	429,755,475	21.6	534,384	765,086,003	11.1
1948	217,911	279,837,012	5.6	204,831	343,160,170	14.8	422,742	709,592,487	8.0
1949	140,186*	205,022,791	2.7	132,963*	228,147,610	11.9	274,149*	433,170,401	4.4
1950	120,285	179,324,979	1.8	130,176	216,029,884	9.7	250,461	395,354,863	3.1
1951	216,973	340,031,796	4.1	216,692	409,290,971	15.2	433,665	749,322,767	6.4
1952	141,026	243,976,067	3.3	155,461	313,753,917	12.8	296,487	557,729,974	5.4
1953	154,459	276,029,378	2.5	133,550	264,948,957	11.1	288,009	540,069,335	3.9
1954	173,069	300,349,922	3.1	183,460	332,449,162	17.6	356,529	632,799,084	5.4

‡ Taken from stockpiles. † From 1928 through 1941 exports include shipments in non-contiguous territories. * Does not include military vehicles for last six months of 1949.

NOTE—Prior to 1931 figures include used vehicles, but the effect of these used vehicles on per cent of production is negligible.

VALUE OF 1954 TOTAL AUTOMOTIVE EXPORTS UP 18%



U. S. Exports of Tires and Tubes

In Units and Their Value

	1954		1953	
Casings	Number	Value	Number	Value
Truck and bus	746,477	$32,554,004	742,560	$36,871,485
Car and motorcycle	886,865	11,244,275	787,548	9,804,218
Aircraft	45,955	2,351,774	.....	.....
Off-the-road	148,076	14,670,009	124,286	12,346,273
Farm tractor	69,232	2,718,541	53,796	2,265,614
Farm implement	23,799	423,300	26,542	419,275
Other	145,318	579,984	.....	.....
Inner Tubes				
Passenger Car	324,708	665,430	349,058	681,918
Truck and Bus	493,076	1,983,985	467,718	2,423,433
Aircraft	23,541	196,608	22,232	173,300
Other	163,336	481,568	254,992	601,156
Total—Casings	2,065,722	$65,551,887	1,734,733	$62,709,865
Total—Inner Tubes	1,014,661	$3,327,591	1,094,000	$3,879,806

U. S. Exports of New Trucks and Chassis

By Gross Vehicle Weights

	1954		1953	
G.V.W.	Number	Value	Number	Value
	Gasoline			
5,000 lb. and under	69,326	$80,051,390	46,729	$57,736,346
5,001-10,000 lb.	29,814	44,503,324	24,144	28,015,776
10,001-14,000 lb.	6,410	10,122,675	7,280	12,773,929
14,001-16,000 lb.	46,872	81,964,438	29,952	54,903,730
16,001-19,500 lb.	13,410	25,160,520	8,833	22,729,513
19,501 and over	11,090	45,290,364	8,713	25,863,767
	Diesel and Semi-Diesel			
19,500 lb. and under	367	928,145	524	1,386,059
19,501 lb. and over	1,690	17,662,829	1,389	14,457,825
Total—All Trucks	178,919	$315,784,585	127,574	$241,536,845

U. S. Exports of Automotive Products, 1951-1954

Vehicles, Engines, Parts and Equipment

Compiled by Automotive Division, Business and Defense Services Administration, from records of Bureau of the Census

Type of Product	1954		1953		1952		1951	
VEHICLES	Number	Value	Number	Value	Number	Value	Number	Value
Passenger Car and Chassis, New	173,069	$ 309,349,922	154,459	$ 276,020,378	141,026	$ 243,976,057	216,973	$ 340,031,796
Passenger Car and Chassis, Used	5,134	6,424,726	4,282	6,302,157	4,254	6,042,604	6,555	7,478,179
Trucks, Buses, and Chassis, New	193,460	332,449,162	132,550	264,048,957	155,461	319,753,917	216,692	409,290,971
Trucks, Buses and Chassis, Used	3,609	5,363,720	5,952	5,318,698	3,203	5,173,032	3,126	4,675,778
Special Purpose Vehicles, New	1,775	15,186,966	885	4,536,520	758	3,603,426	.....	.....
Special Purpose Vehicles, Used	160	322,794	136	240,794	147	311,458	.....	.....
Trailers	1,369	5,470,667	5,655	12,085,207	1,914	7,375,470	3,352	5,749,065
Motorcycles	1,378	1,112,212	1,443	1,129,932	1,694	1,165,468	2,423	1,519,783
Total—New and Used Vehicles	369,954	$ 666,681,169	305,362	$ 569,682,643	308,457	$ 581,402,232	449,120	$ 768,745,572
ENGINES								
Diesel, truck and bus for assembly	25	$ 47,649	325	$ 450,262	375	$ 602,956	94	$ 99,514
Gasoline, truck and bus for assembly	6,961	2,780,366	18,730	4,515,223	11,235	3,642,271	17,292	4,414,186
Passenger car for assembly	9,581	1,453,925	32,390	4,501,110	16,671	2,222,045	17,187	2,000,165
Diesel for replacement	1,045	2,283,098	719	1,461,859	1,026	2,950,804	2,071	3,600,901
Gasoline for replacement	16,506	4,402,856	24,442	7,848,851	29,322	8,292,124	30,104	8,316,491
Marine, outboard	.....	.....	17,478	2,937,546	17,678	3,011,740	18,732	2,874,769
Marine, other	.....	.....	3,899	2,805,841	2,552	1,757,111	2,842	1,870,721
Total—Engines	34,118	$ 10,967,894	98,994	$ 23,671,842	78,859	$ 21,579,051	88,322	$ 23,176,837
PARTS FOR ASSEMBLY	.....	$ 153,441,786	.....	$ 183,205,580	.....	$ 168,302,216	.....	$ 141,626,172
REPLACEMENT PARTS								
Trailer parts	.....	$ 2,171,227	.....	$ 3,199,013	.....	$ 2,426,325	.....	$ 2,001,360
Motorcycle parts	.....	727,366	.....	677,552	.....	747,398	.....	919,350
Bodies, truck and bus	1,127	825,958	1,359	761,809	1,811	971,479	.....	.....
Bodies, passenger car	57	11,721	95	23,901	174	82,765	.....	.....
Leaf and knee-action springs, lb.	23,836,571	4,706,162	20,002,596	4,045,482	20,789,819	4,502,739	19,886,584	4,136,379
Parts for replacement, Other, n.e.c.	.....	184,799,545	.....	157,716,907	.....	193,289,347	.....	222,039,645
Auto horns, hand and electric	.....	.....	.....	.....	.....	.....	700,531	1,837,122
Auto accessories, n.e.c.	.....	6,917,311	.....	5,667,663	.....	8,622,924	.....	26,005,595
Brake lining, molded and semimolded, lbs.*	3,907,274	3,527,638	3,917,441	3,450,282	4,729,352	4,657,696	6,944,955	6,017,473
Brake lining, woven, linear ft.*	2,829,874	1,092,758	667,598	355,814	530,906	424,838	1,034,930	661,474
Brake block, molded, semi-molded and woven, lbs.*	.....	.....	432,738	462,640	389,108	454,587	725,936	680,989
Clutch facings, molded, semi-molded and woven, units*	1,138,760	879,450	1,241,409	900,725	1,550,644	996,080	1,452,270	935,915
Starting, lighting and ignition equipment	.....	24,610,094	.....	24,644,062	.....	24,240,109	.....	19,638,139
Spark plugs	18,203,345	5,441,972	12,608,577	3,712,760	14,919,686	4,451,220	16,522,939	4,694,463
Batteries, storage, 6 and 12 volt*	409,150	5,539,403	406,916	6,603,420	429,492	6,362,070	661,329	8,315,359
Total—Replacement Parts	.....	$ 241,548,925	.....	$ 212,222,240	.....	$ 252,250,657	.....	$ 297,883,291
GARAGE EQUIPMENT								
Auto tire service equipment and parts	.....	.....	.....	.....	.....	.....	.....	$ 966,291
Pumps for gasoline and oil	19,586	4,808,591	13,391	2,919,110	12,568	2,847,836	15,273	3,685,743
Repair and service equipment	.....	25,122,011	.....	19,113,336	.....	29,552,251	.....	17,001,771
Total—Garage Equipment	.....	$ 29,930,602	.....	$ 22,032,446	.....	$ 32,400,087	.....	$ 21,653,825
TIRES AND TUBES								
Casings, truck and bus	746,477	$ 33,554,004	742,560	$ 36,871,485	832,354	$ 45,361,186	855,923	$ 45,386,356
Casings, other	1,319,245	31,997,883	992,173	25,838,380	1,008,040	34,152,290	642,173	10,506,861
Inner tubes for cars, trucks and buses	1,014,661	3,327,591	1,071,768	3,766,306	1,264,722	4,603,669	1,129,298	4,013,435
Solid and cushion tires	92,931	497,147	28,593	446,014	31,317	503,811	85,075	552,424
Tire sundries and repair material								
Camelback, lbs.	8,267,495	2,329,813	7,940,725	2,339,553	6,765,656	2,024,825	3,898,325	1,381,458
Other, lbs.	3,778,783	3,477,335	3,896,347	3,314,757	4,759,964	4,276,226	4,011,506	3,673,792
Total—Tires, tubes, etc.	.....	$ 75,893,773	.....	$ 72,516,695	.....	$ 90,921,347	.....	$ 65,294,350
Total—All Products†	.....	$1,277,664,150	.....	$1,083,431,455	.....	$1,146,855,590	.....	$1,318,380,047

*For all uses. †In addition the value of military vehicles, parts, accessories, and service equipment in 1954 amounted to $236,629,623 as compared with $278,375,625 during 1953.

U. S. Imports of New Passenger Cars, 1950-1954

Imports from	1954 Number	1954 Value	1953 Number	1953 Value	1952 Number	1952 Value	1951 Number	1951 Value	1950 Number	1950 Value
Canada	61	$ 92,374	35	$ 53,668	223	$ 367,798	227	$ 232,956	42	$ 57,144
Mexico	1	700	1	1,445	3	5,744	3	2,304	4	7,222
Bahamas	....	....	....	....	1	500	....	....	....	....
Sweden	1	1,700	1	1,644	2	2,286	2	3,234	1	1,284
United Kingdom	25,632	33,732,252	26,649	36,375,272	31,243	41,071,595	22,069	24,748,637	19,442	19,015,756
Netherlands	1	2,656	4	5,627	17	44,039	....	....	....	....
Belgium	16	17,622	15	28,861	....	....	4	9,270	1	1,650
France	243	212,190	273	355,339	145	243,439	920	823,344	1,426	1,062,908
West Germany	8,250	9,467,857	2,222	2,925,962	1,341	2,142,081	417	414,276	328	251,332
Italy	336	1,368,259	303	1,214,905	224	853,358	49	145,792	28	98,439
Czechoslovakia	....	....	....	....	....	....	3	3,374	14	15,366
All Others	3	2,500	11	27,221	3	2,329	3	5,330	....	....
Total	34,554	$44,896,921	29,566	$42,955,954	33,312	$44,733,779	23,697	$26,388,547	21,287	$20,511,101

U. S. Motorcycle Imports, 1950-54

Imports from	1954 Number	1954 Value	1953 Number	1953 Value	1952 Number	1952 Value	1951 Number	1951 Value	1950 Number	1950 Value
Canada	4	$ 1,707	8	$ 985	2	$ 800	7	$ 2,563	17	$ 7,002
United Kingdom	7,798	2,741,580	5,752	2,213,716	7,665	2,908,232	7,897	2,631,994	7,602	2,543,489
Netherlands	....	....	28	6,735	9	3,120	1	100	1	129
Belgium	60	8,597	....	....	2	459	1	121	6	1,516
France	221	13,790	85	8,816	59	2,989	265	16,122	142	10,813
West Germany	3,295	690,131	2,411	522,774	1,544	400,062	226	87,299	626	160,581
Austria	2,999	508,571	18	4,712	43	11,570	46	10,657	45	10,230
Czechoslovakia	4	823	10	2,242	....	....	493	77,493	809	167,746
Italy	2,954	508,213	6,261	945,987	6,825	1,025,747	140	37,823	160	32,312
All other countries	16	4,592	10	2,496	2	358	5	1,256	7	1,994
Total	17,353	$4,478,204	14,583	$3,708,463	16,153	$4,352,348	9,895	$2,866,956	9,426	$2,935,902

U. S. Imports of Automotive Products

Automotive Division, B.D.S.A. from records of Bureau of the Census

Product	1954 Units	1954 Value
Trucks	426	$ 621,294
Truck and bus chassis	53	119,059
Truck and bus bodies	95	109,153
Total—Truck and bus	....	$ 849,506
Passenger Cars, new	34,554	$44,896,921
Passenger Cars, used	770	853,377
Bodies	226	212,962
Total—Passenger cars	....	$45,963,160
Parts, except tires, tubes, glass	....	$ 6,367,031
Motorcycles	17,353	4,478,204
Motorcycle parts, except tires, glass	....	616,729
Total—Motorcycles	....	$ 5,095,033
Total—U. S. Automotive Imports	....	$58,274,820

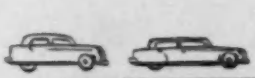
U. S. Tractor Exports, 1954-1953

	1954 Units	1954 Value	1953 Units	1953 Value
Wheel type				
Row-crop type				
8 to 15 belt hp	1,032	$ 800,847	1,250	$ 873,869
15 to 25 belt hp	4,915	5,782,532	5,701	6,347,899
25 to 30 belt hp	5,093	7,086,548	9,868	12,074,452
30 to 35 belt hp	6,520	9,140,059	4,475	6,479,752
35 and over	7,615	15,776,424	6,597	14,108,842
Total	25,179	$38,587,011	27,891	$39,884,814
Other wheel type				
8 to 20 belt hp	276	234,062	382	398,948
20 to 25 belt hp	281	390,544	416	523,306
25 to 35 belt hp	2,476	4,018,389	6,362	9,268,572
35 to 45 belt hp	4,028	8,311,441	4,916	9,533,070
45 and over	9,685	28,452,570	12,361	31,573,727
Total	16,746	$41,407,207	24,432	$51,197,623
Total—All Wheel Type	41,919	$79,994,218	52,323	$91,082,437

1954 Exports of New Vehicles are 50% of Total Automotive Exports

	Passenger Cars	Trucks and Buses	Cars and Trucks	Parts and Accessories†	Rubber Tires and Tubes	Total Value of Exports†
1935	$99,342,411	$51,985,938	$151,328,349	$89,354,087	$13,206,125	$253,888,561
1936	107,483,285	56,683,828	164,167,113	91,329,409	13,938,409	269,434,931
1937	140,638,203	102,957,996	243,596,199	122,364,286	17,914,078	383,874,563
1938	104,628,982	74,490,936	179,119,918	107,613,293	15,871,365	302,603,576
1939	89,173,300	71,422,015	160,594,515	109,321,470	21,853,302	291,769,288
1940	62,766,211	91,324,669	155,100,330	117,173,166	27,520,315	299,794,361
1941	69,077,198	154,101,500	223,178,698	133,015,153	31,472,904	387,666,755
1942	13,884,613	263,861,310	277,745,923	158,715,416	46,765,430	483,226,774
1943	2,896,124	147,920,724	150,815,858	133,038,789	92,716,670	376,571,317
1944	3,023,981	401,587,426	404,611,407	245,609,650	61,379,255	712,200,521
1945	2,896,836	353,836,408	356,735,244	241,094,284	59,880,953	662,711,181
1946	122,500,568	227,748,532	350,249,100	207,418,991	73,767,045	631,435,136
1947	235,320,528	429,998,475	765,329,003	393,078,056	121,081,083	1,279,488,142
1948	279,837,613	343,160,770	622,997,782	316,102,194	66,547,973	1,005,697,949
1949	205,074,033	238,147,610	440,699,821	341,661,414	67,316,938	862,015,025
1950	179,324,979	216,029,354	395,354,362	339,767,027	39,404,404	796,739,374
1951	340,031,796	409,290,971	749,322,767	450,582,093	65,294,350	1,313,250,047
1952	242,976,057	313,753,917	557,729,974	472,710,334	90,927,349	1,146,855,590
1953	276,020,378	264,048,957	540,069,335	470,845,425	72,516,695	1,083,431,455
1954	300,349,922	332,449,162	632,799,084	569,771,302	75,093,773	1,277,664,159

†Includes special purpose vehicles, used cars and trucks, trailers and motorcycles, parts for assembly and replacement and garage equipment.



1955 PASSENGER CARS

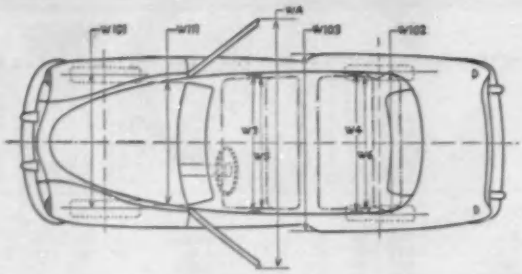
PRICE • WEIGHT • BODIES

Following are prices at factory for cars with standard equipment as of February 25, 1955. State or local taxes, transportation and finance charges and optional equipment are extra.

BODY MAKE AND MODEL	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight
BUICK				
Special 48				
Sedan, 2d	2035	198	2233	3095
Sedan, 4d	2090	201	2291	3725
Riviera	2128	204	2332	3700
Conv. Coupe	2369	221	2590	3805
Est. Wagon	2726	248	2974	3820
Century 60				
Sedan, 4d	2318	233	2548	3825
Riviera	2364	237	2601	3905
Conv. Coupe	2727	264	2991	3950
Est. Wagon	2898	276	3175	3965
Super 50				
Riviera	2578	253	2831	4075
Sedan, 4d	2921	256	2870	4140
Conv. Coupe	2945	280	3225	4200
Roadmstr. 70				
Sedan, 4d	3047	302	3349	4300
Riviera	3144	309	3453	4270
Conv. Coupe	3234	318	3552	4415
CADILLAC				
Series 62				
Coupe	3569	313	3882	4358
Sedan	3656	319	3977	4370
Coupe de Ville	3964	341	4305	4427
Convertible	4097	351	4448	4627
Eldorado	5814	472	6286	4909
Series 60				
Sedan	4342	398	4738	4540
Series 75				
Fltwd. Sedan	5895	482	6167	5015
Fltwd. Imper.	5895	507	6402	
CHEVROLET				
One-Fifty, 6 cyl.				
Util. Sedan	1450	143	1593	3040
Sedan, 2d	1535	150	1685	3070
Sedan, 4d	1575	153	1728	3115
Sta. Wagon, 2d	1855	175	2030	3305
Two-Ton, 6 cyl.				
Sedan, 2d	1619	156	1775	3085
Sedan, 4d	1660	159	1819	3125
Club Coupe	1675	160	1835	3100
Sta. Wagon, 2d	1900	179	2079	3325
Sta. Wagon, 4d	1945	182	2127	3360
Bel Air, 6 cyl.				
Sedan, 2d	1724	164	1888	3110
Sedan, 4d	1766	167	1932	3140
Sport Coupe	1890	177	2067	3130
Conv. Coupe	2016	188	2206	3250
Sta. Wagon, 4d	2070	192	2262	3380
One-Fifty, 8 cyl.				
Util. Sedan	1542	150	1692	3090
Sedan, 2d	1627	157	1784	3030
Sedan, 4d	1667	160	1827	3075
Sta. Wagon, 2d	1947	182	2129	3265
Two-Ton, 8 cyl.				
Sedan, 2d	1711	163	1874	3045
Sedan, 4d	1752	166	1918	3085
Club Coupe	1767	167	1934	3060
Sta. Wagon, 2d	1992	186	2178	3285
Sta. Wagon, 4d	2037	189	2226	3320
Bel Air, 8 cyl.				
Sedan, 2d	1816	171	1987	3070
Sedan, 4d	1857	174	2031	3100
Sport Coupe	1982	184	2166	3090
Conv. Coupe	2110	195	2305	3240
Sta. Wagon, 4d	2162	199	2361	3340
Corvette				
Convertible				2706
CHRYSLER				
Windsor				
Sedan, 4d	2412	193	2605	3825
Nassau	2452	196	2648	3830
Newport	2569	204	2763	3825
Conv. Coupe	2812	223	3035	4075
Twn. & Cty.	3037	240	3277	4295
New Yorker				
Sedan, 4d	3185	234	3439	4160
Newport	3332	245	3597	4140
St. Regis	3367	268	3635	4125
Conv. Coupe	3585	284	3869	4285
Twn. & Cty.	3850	304	4154	4430
Imperial				
Sedan, 4d	4105	323	4428	4885
Newport	4325	348	4665	4490
Crown Imp.				
Sedan, 4d				
Limousine				
DE SOTO†				
Firedome-S22				
Sedan, 4d	2298	185	2483	3870
Spec. Coupe	2308	188	2496	3810
Sportsman	2413	196	2609	3808
Convertible	2571	208	2779	4010
Sta. Wagon	2893	232	3125	4185
Firefite-S21				
Sedan, 4d	2481	201	2682	3940
Sportsman	2670	216	2864	3890
Convertible	2875	231	3106	4115
DODGE†				
Coronet 6				
Sedan, 2d	1838	150	1988	3235
Sedan, 4d	1912	156	2068	3295
Suburban, 2d				3410
Suburban, 4d, 2s				
Suburban, 4d, 3s				
Coronet, V8				
Sedan, 4d	2008	163	2171	3305
Lancer	2087	169	2256	3375
Suburban, 2d				3550
Suburban, 4d, 2s				
Suburban, 4d, 3s				
Royal, V8				
Sedan, 4d	2114	171	2285	3425
Lancer	2193	177	2370	3425
Sierra, 4d, 2s				3655
Sierra, 4d, 3s				
Cust. Royal				
Sedan, 4d	2285	183	2468	3485
Lancer	2330	189	2518	3480
Lancer, Conv.	2521	202	2723	3610
FORD				
Mainline, 6				
Bus. Sedan			1606	3026
Sedan, 2d			1707	3087
Sedan, 4d			1753	3106
Customline 6				
Sedan, 2d			1801	3087
Sedan, 4d			1845	3126
Fairlane, 6				
Club Sedan, 2d			1914	3088
Town Sedan, 4d			1960	3119
Victoria			2096	3196
Crwn. Victoria			2202	3248
Sunliner			2204	3296
Crwn.Vict.,Tr. Top			2272	3254
Sta. Wgns. 6				
Ranch			2043	3309
Custom Ranch			2109	3326
Cty. Sedan, 6p			2156	3474
Cty. Sedan, 8p			2287	3401
Cty. Squire			2392	3486
Mainline 8				
Bus. Sedan			1706	3136
Sedan, 2d			1867	3177
Sedan, 4d			1883	3216
Customline 8				
Sedan, 2d			1901	3197
Sedan, 4d			1945	3236
Fairlane 8				
Club Sedan, 2d			2014	3222
Town Sedan, 4d			2060	3253
Victoria			2195	3332
Crwn. Victoria			2302	3390
Sunliner			2304	3436
Crwn. Vict., Tr. Top			2372	3388
Sta. Wgns., 8				
Ranch			2143	3443
Custom Ranch			2209	3460
Cty. Sedan, 6p			2256	3508
Cty. Sedan, 8p			2367	3515
Cty. Squire			2492	3614
Thunderbird				
Convertible			2695	2906
HUDSON				
Wasp				
Sed., 4d, Super	2086	164	2250	3254
Sed., 4d, Cust.	2254	206	2460	3347
Hd.Top,2d,Cus.	2357	213	2570	3362
Hornet Six				
Sed., 4d, Super	2261	214	2565	3495
Sed., 4d, Cust.	2533	227	2760	3562
Hd.Top,2d,Cus.	2643	235	2580	3567
Hornet V8				
Sed., 4d, Super	2563	232	2835	3606
Sed., 4d, Cust.	2770	245	3015	3646
Hd.Top,2d,Cus.	2882	253	3145	3670
KAISER				
Special				
Club Sedan	2141	193	2334	
Sedan, 4d	2162	197	2309	3210
Manhattan				
Club Sedan	2404	213	2617	
Sedan, 4d	2453	217	2670	3376
Darrin	3360	300	3660	
LINCOLN				
Custom				
Sedan, 4d			3963	4235
Sport Cpe.			3866	4185
Capri				
Sedan, 4d			3752	4275
Sport Cpe			3810	4305
Convertible			4071	4415
MERCURY				
Custom				
Sedan, 2d			2210	3396
Sedan, 4d			2277	3450
Sport Coupe			2341	3400
Sta. Wagon			2656	3700
Monterey				
Sedan, 4d			2408	3508
Hard Top			2464	3510
Sta. Wagon			2844	3770
Montclair				
Hard Top			2831	3490
Sun Valley			2711	3560
Convertible			2712	3686
NASH				
Statesman				
Super				
Sedan, 4d.	2025	190	2215	3134
Custom				
Sedan, 4d.	2183	202	2385	3204
Cty. Club	2208	209	2406	3220
Ambassador 6				
Sed., 4d. Super	2271	209	2480	3530
Custom				
Sedan, 4d.	2453	221	2675	3575
Cty. Club	2565	230	2795	3504
Ambassador V8				
Sed., 4d. Super	2547	229	2775	3795
Custom				
Sedan, 4d.	2734	241	2965	3827
Cty. Club	2846	249	3095	3839
NASH-HUDSON				
Rambler				
De Luxe				
Sedan, 2d	1447	138	1585	2432
Sedan, 4d	1549	148	1696	2567
Super				
Sedan, 2d	1536	147	1683	2550
Sedan, 4d	1643	158	1798	2570
Sta. Wagon	1760	169	1929	2693
Custom				
Sedan, 4d	1821	198	1999	2604
Cty. Clb. Sed.	1827	168	1995	2618
Sta. Wagon	1923	175	2098	2665
Metropolitan				
Hard Top, 2d.	1330	115	1445	1875
Convertible, 4d	1353	116	1469	1835
OLDSMOBILE				
Series 88				
Sedan, 2d	2091	206	2297	3669
Sedan, 4d	2151	211	2362	3707
Holiday Cpe.	2295	219	2474	3707
Super 88				
Sedan, 2d	2215	221	2436	3720
Sedan, 4d	2276	225	2503	3762
DeL. Holiday	2474	240	2714	3765
Conv. Coupe	2641	253	2894	3969
Series 98				
Sedan, 4d	2579	254	2833	3884
DeL. Holiday	2796	271	3067	3924
Conv. Coupe	2990	288	3278	4159
PACKARD				
Clipper				
DeLuxe				
Tour.Sedan,4d	2373	213	2586	3680
Super				
Tour.Sedan,2d	2486	223	2708	3670
Coupe	2500	226	2776	3766
Custom				
Tour.Sedan,4d	2699	237	2936	3868
Coupe	2829	247	3076	3868
PACKARD (Continued)				
Packard				
Patrician, 4d	3728	312	4040	4275
Coupe, 2d	3798	314	4000	4250
Caribbean, 2d				4755
PLYMOUTH†				
Plaza, 6				
Bus. Coupe	1490	123	1613	3025
Club Sedan	1562	130	1692	3069
Sedan, 4d	1622	133	1756	3129
Suburban, 2d	1897	156	2052	3291
Suburban, 4d	1873	160	2133	3282
Savoy, 6				
Club Sedan	1674	137	1811	3109
Sedan, 4d	1714	140	1854	3154
Belvedere, 6				
Club Sedan	1705	144	1910	3139
Sedan, 4d	1806	147	1953	3169
Sport Coupe	1931	157	2088	3148
Suburban, 4d	2125	172	2297	3230
Plaza, V8				
Club Sedan	1670	138	1818	3202
Sedan, 4d	1716	141	1899	3246
Suburban, 2d	1963	162	2156	3388
Suburban, 4d	2060	169	2237	3466
Savoy, V8				
Club Sedan	1770	145	1915	3224
Sedan, 4d	1818	148	1966	3286
Belvedere, V8				
Club Sedan	1862	152	2014	3228
Sedan, 4d	1902	155	2057	3267
Sport Coupe	2027	164	2191	3261
Suburban, 4d	2221	179	2400	3475
Conv. Coupe	2152	174	2326	3409
PONTIAC				
Chieftain 8				
Sedan, 2d 860	1917	188	2105	3470
Sedan, 4d 860	1972	192	2164	3511
Sedan, 2d 870	2014	193	2208	3479
Sedan, 4d 870	2069	196	2268	3511
Catalina 870	2131	204	2335	3521
St. Wg., 2d 860	2223	211	2434	3626
St. Wg., 4d 860	2301	217	2518	3686
St. Wg., 4d 870	2360	223	2603	3676
Cus. Sta. Wag.				
Star Chief 8				
Sedan, 4d	2106	206	2362	3658
Cust. Sed., 4d	2243	212	2486	3656
Cust. Catalina	2294	216	2490	3560
Conv. Coupe	2462	229	2691	3791
Cus. Sta. Wag.	2714	246	2962	3630
STUDEBAKER				
Champion				
Custom				
Sedan, 2d	1580	161	1741	2755
Sedan, 4d	1619	164	1783	2800
DeLuxe				
Sedan, 2d	1674	166	1840	2780
Sedan, 4d	1715	170	1885	2820
Coupe, 5p	1706	170	1875	2790
Station Wagon	1952	188	2140	3060
Regal				
Sedan, 4d	1615	170	1993	2830
Coupe, 5p	1790	177	1975	2795
Hdtp. Conv.	1941	188	2129	2965
Station Wagon	2111	201	2312	3029
Commander				
Custom				
Sedan, 2d	1695	176	1873	3050
Sedan, 4d	1736	181	1919	3095
DeLuxe				
Sedan, 2d	1785	184	1969	3075
Sedan, 4d	1827	187	2014	3110
Coupe, 5p	1804	188	1989	3090
Station Wagon	2069	206	2274	3295
Regal				
Sedan, 4d	1932	195	2127	3120
Coupe, 5p	1901	193	2094	3100
Hdtp. Conv.	2076	206	2282	3175
Station Wagon	2239	217	2446	3305
President				
DeLuxe				
Sedan, 4d	2102	209	2311	3205
State				
Coupe, 5p	2064	206	2270	3110
Sedan, 4d	2160	213	2381	3260
Hdtp. Conv.	2236	216	2406	3175
Speedster	2713			2225
WILLYS				
Sedan, 4d	1584	141	1725	2778
Hard Top	1649	146	1795	2947

† Prices do not include delivery and handling charges.

WIDTH DIMENSIONS



1955 PASSENGER CAR BODY DATA

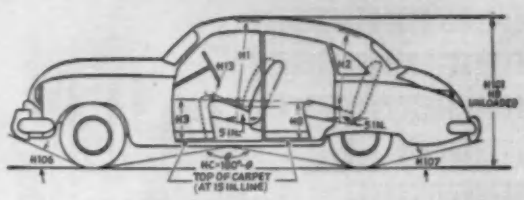
All dimensions apply to 5 or 6 passenger, 4-door sedan or equivalent model.

PASSENGER CAR MAKE AND MODEL	MISCELLANEOUS								GENERAL DIMENSIONS (Ins.)									
	Doors Hinged								L101	Overhang		Tread		Overall Dimensions				W111
	Front Door	Rear Door	Type of Finish	Hood Opening	Hood Counterbalanced	Hood Release Control	Windshield Type	Rear Window Type	Wheelbase	L104 Front — Including Bumper Guards	L105 Rear — Including Bumper Guards	W101 Front	W102 Rear	L103 Length — Bumper to Bumper	W103 Width	WA Width — Doors Open	HB Height — Unloaded	Windshield — Max Width
Buick Special 40	F	F	L	FI	Y	Ex	C	C	122.0	35.4	49.3	59.0	59.0	196.7	76.2	146.8	(a)	61.0
Super 50	F	F	L	FI	Y	Ex	C	C	127.0	35.4	53.6	59.0	62.2	216.0	80.0	147.8	64.1	61.0
Century 60	F	F	L	FI	Y	Ex	C	C	122.0	35.4	49.3	59.0	59.0	206.7	76.2	146.8	62.2	61.0
Roadmaster 70	F	F	L	FI	Y	Ex	C	C	127.0	35.4	53.6	59.0	62.2	216.0	80.0	147.8	64.3	61.0
Cadillac 60	F	F	L	F	Y	Ex	C	C	133.0	34.8	56.5	60.0	63.1	227.3	79.8	152.4	64.1	61.0
62	F	F	L	F	Y	Ex	C	C	129.0	34.8	52.5	60.0	63.1	216.3	79.8	152.4	64.1	61.0
75	F	F	L	F	Y	Ex	C	1F	149.8	34.8	52.5	60.0	63.2	237.1	79.8	150.7	66.2	61.0
Chevrolet One-Fifty, Two-Ten, Bel Air 6, 8	F	F	L	F	Y	Ex	C	C	115.0	31.1	49.5	58.0	58.8	195.6	73.8	140.7	62.1	58.5
Corvette 2934	F	N	L	RA	N	In	C	1F	102.0	29.1	36.9	57.0	59.0	167.0	72.2	125.0	52.2	51.9
Chrysler Windsor DeLuxe C-67	F	F	E	FI	Y	Ex	C	C	126.0	36.8	55.8	60.2	59.6	218.6	79.1	153.0	62.7	62.0
New Yorker DeLuxe C-68	F	F	E	FI	Y	Ex	C	C	126.0	36.8	56.8	60.2	59.6	218.8	79.1	153.0	62.9	62.0
Imperial C-69	F	F	E	FI	Y	Ex	C	C	130.0	37.0	56.0	61.0	60.4	223.0	79.1	160.0	63.1	62.0
Crown Imperial C-70	F	F	E	FI	Y	Ex	C	C	149.5	37.0	56.0	61.7	60.9	242.5	79.1	NA	63.1	62.0
De Soto Firelite S-21, Firedome S-22	F	F	E	FI	Y	Ex	C	C	126.0	36.6	55.3	60.2	59.6	217.9	78.3	153.0	62.7	62.0
Dodge Coronet, Royal & Cust. Royal D-56	F	F	E	FI	Y	Ex	C	C	120.0	39.3	52.8	58.9	59.1	212.1	74.5	151.4	62.6	59.5
Coronet D-56-1	F	F	E	FI	Y	Ex	C	C	120.0	39.3	52.8	58.9	59.1	212.1	74.5	151.4	62.4	59.5
Ford Mainline, Customline, Fairlane	F	F	E	FI	Y	Ex	C	C	115.5	33.9	49.1	58.0	58.0	196.5	75.9	148.9	62.8	59.5
Thunderbird 40A, 40B	F	N	E	RA	N	In	C	C	102.0	27.6	45.7	56.0	56.0	175.3	70.3	148.9	50.2*	56.0
Hudson Wasp 35540	F	F	E	FI	Y	Ex	C	C	114.3	34.9	(b)	59.5	59.7	(c)	76.0	148.3	NA	62.3
Hornet 35560, 35580	F	F	E	FI	Y	Ex	C	C	121.3	34.9	(b)	59.5	59.5	(d)	76.0	148.3	NA	62.3
Lincoln Custom 73A, Special Custom 73B	F	F	LE	FI	Y	Ex	C	C	123.0	37.5	55.1	58.5	60.0	215.6	77.4	149.0	64.2	56.0
Mercury Custom, Monterey	F	F	E	FI	Y	Ex	C	C	118.0	34.3	53.0	58.0	59.0	208.3	76.4	148.9	63.1	59.5
Montclair	F	F	E	FI	Y	Ex	C	C	119.0	34.3	53.0	58.0	59.0	206.3	76.4	148.9	60.5	59.5
Nash Statesman 5540	F	F	E	FI	Y	Ex	C	3C	114.3	34.9	(b)	59.5	59.7	(c)	76.0	148.3	NA	62.3
Ambassador 5560, 5580	F	F	E	FI	Y	Ex	C	3C	121.3	34.9	(b)	59.5	60.5	(d)	76.0	148.3	NA	62.3
Nash-Hudson Metropolitan 541, 542	F	N	E	FI	N	Ex	1F	3C	85.0	28.4	36.2	45.3	44.8	149.5	61.5	135.0	NA	43.8
Rambler 5510-108" WB	F	N	E	FI	Y	Ex	C	(e)	108.0	31.4	(f)	54.6	53.0	(g)	73.5	150.1	NA	50.0
Rambler 5510-108" WB	F	F	E	FI	Y	Ex	C	(e)	108.0	31.4	(f)	54.6	53.0	(h)	73.5	130.3	NA	50.0
Oldsmobile 88, Super 88	F	F	L	F	Y	Ex	C	C	122.0	33.6	47.8	59.0	58.0	203.4	77.8	137.7	62.2	58.0
Ninety-Eight	F	F	L	F	Y	Ex	C	C	126.0	33.6	52.8	59.0	58.0	213.4	77.8	137.7	62.2	58.0
Packard Clip. Del., Sup. 5540, Cust. 5560	F	F	L	F	Y	Ex	C	C	122.0	36.2	56.6	59.7	60.0	214.8	76.0	148.0	NA	59.4
Packard 5580	F	F	L	F	Y	Ex	C	C	127.0	36.2	56.3	60.0	60.9	218.5	76.0	148.0	NA	59.4
Plymouth Plaza, Belvedere, Savoy P26, 27	F	F	E	FI	Y	Ex	C	C	115.0	35.8	53.0	58.4	58.5	203.8	74.5	151.4	62.2	59.5
Pontiac Chieftain 55-27	F	F	L	F	Y	Ex	C	C	122.0	32.7	48.5	58.7	59.1	203.2	75.4	143.2	62.5	59.4
Star Chief 56-36	F	F	L	F	Y	Ex	C	C	124.0	32.7	53.5	58.7	59.1	210.2	75.4	143.2	62.5	59.4
Studebaker Champion 16G6	F	F	E	FI	Y	Ex	C	C	116.5	37.4	48.4	56.7	55.7	202.3	(i)	136.4	59.8	(j)
Commander 16G5	F	F	E	FI	Y	Ex	C	C	116.5	37.4	48.4	56.7	55.7	202.3	(i)	135.4	60.0	(j)
President 6H	F	F	E	FI	Y	Ex	C	C	120.5	37.4	48.4	56.7	55.7	206.3	70.4	135.4	60.0	(j)
Willys Bermuda, Custom 6-226-A	F	F	E	F	Y	Ex	C	C	108.0	37.4	44.5	59.0	57.0	189.9	72.0	139.5	62.8	55.6

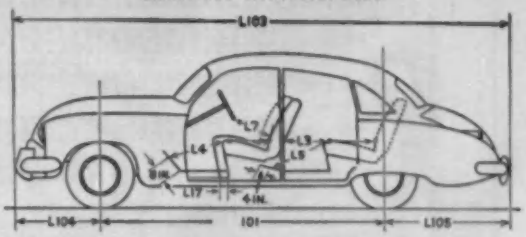
ABBREVIATIONS

*—Loaded with top down.
(a)—62.9 with 7.10/15 tires; 62.2 with 7.60/15 tires.
(b)—53.1 std.; 63.1 with rear tire mount.
(c)—202.3 std.; 212.3 with rear tire mount.
(d)—209.3 std.; 219.3 with rear tire mount.
(e)—2 & 4 door station wagon and 2 door sedan, one piece flat; hardtop and 4 door sedan, three piece curved.
(f)—46.9 std.; 54.0 with rear tire mount.
(g)—178.3 std.; 185.4 with rear tire mount.
(h)—186.3 std.; 193.4 with rear tire mount.
(i)—Regal, 70.4; Custom and DeLuxe, 69½.
(j)—Early cars, 50.1; late cars, 55.8.
C—One piece curved.
3C—Three piece curved.
E—Enamel.
Ex—External.
F—Front.
1F—One piece flat.
FI—Front, full.
In—Internal.
L—Lacquer.
LE—Lacquer or enamel.
N—No or none.
NA—Dimension not available.
RA—Reverse alligator.
WB—Wheel base.
Y—Yes.

HEIGHT DIMENSIONS



LENGTH DIMENSIONS



1955 PASSENGER CAR BODY DIMENSIONS

All dimensions apply to 5 or 6 passenger, 4-door sedan or equivalent model.

PASSENGER CAR MAKE AND MODEL	HEIGHT DIMENSIONS									WIDTH DIMENSIONS				LENGTH DIMENSIONS				
	Interior					Exterior				Interior				Interior				
	H1	H2	H3	H8	H13	H106	H107	HC	HD	W3	W4	W5	W6	L3	L4	L5	L7	L17
	Front Headroom	Rear Headroom	Front Seat Height to Floor	Rear Seat Height to Floor	Steering Wheel Clearance to Seat Cushion	Angle of Approach—Deg	Angle of Departure—Deg	Rump Breakover Angle—Deg	Minimum Road Clearance—In	Front Seat Shoulder Room	Rear Seat Shoulder Room	Front Seat Hip Room	Rear Seat Hip Room	Back of Front Seat to Rear Seat Back	Leg Room—Front	Leg Room—Rear	Steering Wheel Clearance	Adjustment of Front Seat
Buick Special 40	35.6	34.0	12.6	12.4	5.2	(a)	(b)	(c)	(d)	59.2	58.7	62.5	62.4	32.4	42.3	41.5	13.4	4.4
Super 50	36.6	35.2	13.2	12.1	5.1	25.0	11.1	12.9	6.6 BH	59.4	58.7	64.9	65.7	34.8	43.2	45.1	13.5	4.0
Century 60	35.6	34.0	12.6	12.4	5.2	25.0	12.6	13.5	6.6 BH	59.2	58.7	62.5	62.4	32.4	42.3	41.4	13.4	4.4
Roadmaster 70	35.9	35.1	13.9	12.7	4.4	25.7	11.5	13.3	6.6 BH	59.4	58.7	64.7	65.7	35.0	43.6	45.6	13.5	4.0
Cadillac 60	35.6	35.6	13.6	12.0	5.4	19.6	13.6	11.6	6.1 FFK	59.4	58.9	64.3	65.2	35.7	43.3	46.3	14.1	4.0
62	35.6	35.6	13.6	12.0	5.4	19.6	11.6	11.6	6.1 FFK	59.4	58.9	64.3	65.2	35.7	43.3	46.3	14.1	4.0
75	36.5	35.1	13.6	14.4	5.6	22.0	14.0	11.6	6.7 ER	60.3	60.4	64.4	66.1	53.5	43.4		14.2	4.0
Chevrolet One-Fifty, Two-Ton, Bel Air 2400	35.7	35.4	12.5	13.0	5.2	28.3	16.0	13.5°	6.5 UEP	58.8	58.4	62.0	63.0	30.4	43.1	40.8	13.7	4.4
Corvette 2934	35.4	N	8.2	N	5.3	30.0	19.5	35.8	6.0 BDO	61.3	N	57.2	N	N	41.0	N	13.4	4.4
Chrysler Windsor DeLuxe C-67	35.0	34.5	13.3	13.5	5.4	19.0	11.0	11.0	6.2 FSR	58.4	58.4	63.3	64.0	34.9	44.6	44.8	14.6	5.0
New Yorker DeLuxe C-68	35.0	34.5	13.3	13.5	5.4	20.0	12.0	12.0	6.5 FSR	58.4	58.4	63.3	64.0	34.9	44.6	44.8	14.6	5.0
Imperial C-69, Crown Imperial C-70	35.0	34.6	13.3	13.5	5.4	20.0	12.0	11.0	6.2 FSR	58.3	58.3	62.5	62.0	38.0	44.6	45.4	14.6	5.0
De Soto Firefiite S-21	35.0	34.5	13.3	13.5	5.4	21.0	12.0	11.0	6.2 FSR	58.4	58.4	63.3	64.0	34.0	44.6	44.8	14.6	5.0
Firedome S-22	35.0	34.5	13.3	13.5	5.4	21.0	12.0	11.0	6.3 FSR	58.4	58.4	63.3	64.0	34.0	44.6	44.8	14.6	5.0
Dodge Coronet, Royal, Custom Royal D-55	35.5	34.9	13.4	12.8	5.4	18.0	12.0	11.0	6.0 OP	58.9	57.8	62.5	62.6	31.5	44.5	45.0	14.7	5.0
Coronet D-56-1	35.5	34.9	13.4	12.8	5.4	18.0	12.0	11.0	5.0 CH	58.9	57.8	62.5	62.6	31.5	44.5	45.0	14.7	5.0
Ford Mainline, Customline, Fairlane 6	35.1	34.2	12.6	13.1	5.4	23.2	13.0	13.9	6.5 RS	57.0	58.0	60.5	60.3	29.9	44.3	41.9	(e)	4.9
Mainline, Customline, Fairlane 8	35.1	34.2	12.6	13.1	5.4	23.2	12.0	13.9	6.5 RS	57.0	58.0	60.5	60.3	29.9	44.3	41.9	(e)	4.9
Thunderbird 40A, 40B	(f)	N	7.3	N	5.01	23.6	16.2	31.0		53.3	N	58.0	N	N	46.4	N	14.01	4.0
Hudson Wasp 35540	37.5	36.0	12.3	12.8	5.4	25.0	(g)	13.0	NA	61.5	61.3	65.0	64.5	31.8	42.5	40.1	14.3	5.0
Hornet 35C60, 35560	37.5	36.0	12.3	13.0	5.4	25.5	(h)	13.5	NA	61.5	61.3	65.0	64.5	31.8	42.5	40.1	14.3	5.0
Lincoln Custom 73A, Special Custom 73B	35.5	34.7	13.5	12.3	4.9	20.0	11.5	13.9	7.4 FCM	57.5	57.2	62.3	62.1	32.0	44.3	42.0	14.3	4.1
Mercury Custom	36.4	34.2	12.0	13.1	5.5	22.2	12.0	13.4	6.6 FO	57.0	58.0	60.6	60.3	31.6	43.8	42.8	13.9	4.9
Monterey	36.4	34.2	12.0	13.1	5.5	22.2	11.9	13.4	6.6 FO	57.0	58.0	60.6	60.3	31.6	43.8	42.8	13.9	4.9
Montclair	33.5	32.2	11.5	13.1	5.5	22.2	11.9	13.4	6.6 FO	57.4	57.5	60.6	60.5	29.2	43.6	40.6	13.7	4.9
Nash Statesman 5540	37.5	36.0	12.3	13.0	6.4	25.0	(g)	13.0	NA	61.5	61.3	65.0	64.5	31.8	42.5	40.1	14.3	5.0
Ambassador 5560, 5580	37.5	36.0	12.3	13.0	6.4	25.5	(h)	13.5	NA	61.5	61.3	65.0	64.5	31.8	42.5	40.1	14.3	5.0
Nash-Hudson Metropolitan 541, 542	35.0	N	10.0	N	6.5	30.0	20.5	20.0	NA	45.3	N	49.0	N	N	43.3	N	14.6	4.0
Rambler 5510, 100" WB	36.5	35.5	12.0	14.0	6.3	23.0	(i)	21.0	NA	61.5	49.0	58.0	46.3	28.3	44.0	37.5	14.0	5.5
Rambler 5510, 108" WB	36.5	35.5	12.0	14.0	6.3	23.0	(i)	19.0	NA	62.5	62.3	60.0	59.5	30.3	44.0	39.5	14.0	5.5
Oldsmobile 88	35.6	34.6	13.2	12.4	4.9	25.9	15.2	12.7	6.3 FSR	58.2	58.7	62.3	62.4	32.6	42.9	43.8	12.9	4.4
Super 88	35.6	33.8	13.2	13.2	4.9	25.9	15.2	12.7	6.3 FSR	58.2	58.7	62.3	62.1	32.6	42.9	44.3	12.9	4.4
Ninety-Eight	35.6	33.8	13.1	13.0	4.9	25.9	13.5	12.3	6.2 FSR	58.2	58.7	62.3	62.1	32.4	42.8	44.0	12.9	4.4
Packard Clipper DeLuxe & Super 5540	36.2	34.5	13.8	13.4	5.1	29.0	9.8	5.4	NA	57.0	55.5	62.8	62.0	31.4	43.3	43.6	14.3	5.0
Clipper Custom 5560	36.2	34.5	13.8	13.4	5.1	29.0	9.3	5.4	NA	57.0	55.5	62.8	62.0	31.4	43.3	43.6	14.3	5.0
Packard 5580	36.2	34.9	13.0	13.8	5.5	29.0	13.5	5.8	NA	57.0	56.5	62.8	62.0	37.1	43.0	43.8	14.0	5.0
Plymouth Plaza, Belvedere, Savoy P-26	35.0	34.6	13.3	13.1	5.4	22.0	12.0	12.0	5.4 OP	58.0	57.8	62.5	62.6	30.8	44.5	44.5	14.6	5.0
Plaza, Belvedere, Savoy P-27	35.0	34.6	13.3	13.1	5.4	22.0	12.0	12.0	5.6 OP	58.0	57.8	62.5	62.6	30.8	44.5	44.5	14.6	5.0
Pontiac Chieftain 56-27	35.6	35.9	13.7	12.0	5.1	26.1	16.2	12.7	6.7 FSR	58.6	58.4	61.0	63.1	32.6	42.7	42.6	13.3	4.4
Star Chief 56-28	35.6	35.9	13.7	12.0	5.1	26.1	13.6	12.5	6.7 FSR	58.6	58.4	61.0	63.1	32.6	42.7	42.7	13.3	4.4
Studebaker Champion 16G6	36.0	35.0	13.5	12.0	5.4	29.0	19.0	14.5	6.5 ERS	56.5	54.5	59.5	59.0	26.3	42.5	39.0	15.5	5.5
Commander 16G5	36.0	35.0	13.5	12.0	5.4	22.0	17.5	14.5	7.3 ERS	58.5	54.5	59.5	59.0	29.3	42.5	39.0	15.5	5.5
President 6H	36.0	35.0	13.5	12.5	5.4	22.0	17.5	14.5	7.5 ERS	58.5	54.5	59.5	59.0	32.3	42.5	41.0	15.5	5.5
Willys Bermuda, Custom 6-226-A	34.6	34.1	12.3	13.0	5.4	22.0	17.0	15.0	6.5 M	57.0	57.0	61.0	61.0	29.3	41.6	37.9	12.0	4.0

ABBREVIATIONS

•—Loaded.
†—Wheel in neutral position.
(a)—24.4 with 7.10/15 tires; 25.0 with 7.60/15 tires.
(b)—12.2 with 7.10/15 tires; 12.6 with 7.60/15 tires.
(c)—13.0 with 7.10/15 tires; 13.5 with 7.60/15 tires.
(d)—6.3 at mid section with 7.10/15 tires; 6.6 at bell housing with 7.60/15 tires.
(e)—Mainline and Customline, 15.0; Fairlane, 14.9.
(f)—40A, 33.0; 40B, 33.2.
(g)—14.5 std.; 11.5 with rear tire mount.
(h)—15.5 std.; 12.5 with rear tire mount.
(i)—15.3 std.; 13.3 with rear tire mount.
BDO—Below door opening.
BH—Bell housing.
CH—Converter housing.
ER—Exhaust rearseat.
ERS—Engine rear support cross member.
FCM—Number two frame cross member.
FFK—Front of frame kick up.
FO—Number one outrigger on frame.
FSR—Frame side rail.
M—Muffler.
N—No or none.
NA—Dimension not available.
OP—Oil pan.
RS—Rear shock absorber.
UEP—Under exhaust pipe.
WB—Wheelbase.

GENERAL ENGINE DATA, PISTONS

PASSENGER CAR MAKE AND MODEL	ENGINE: Type	Valve Arrangement	Number of Cylinders, Bore and Stroke	Piston Displacement—Cu. In.	Compression Ratio (to—1): Standard	Compression Ratio (to—1): Optional	Cylinder Head Material	Mounting Points: Front	Mounting Points: Rear	Taxable Horsepower	Adv. Max. Brake Hp. at Engine RPM	Max. Torque (lb. ft. at RPM)	Recommended Idle Speed—RPM	Shipping Weight (lbs.) 5 & 6 Pass., 4 Door Sedan	Weight per Cu. In.[1]	Weight per Hp.[2]	Horsepower per Cu. In.	PISTONS: Material	Description and Finish	Weight—Oz. (Piston Only)	Clearance: Top Land	Clearance: Top of Skirt	Clearance: Bottom of Skirt	Ring Groove Depth: No. 1 Ring	Ring Groove Depth: No. 2 Ring	Ring Groove Depth: No. 3 Ring	Ring Groove Depth: No. 4 Ring
Buick Special 40	V	IH	8-3½x3½	264.6	7.80	8.40[1]	CI	2	1	42.06	188-4800[2]	256-2400[3]	450	3725	16.60	22.47	.712	AA	Cg,Tc,Ds,A	16.25[4]	.0280	.0016	.0016	.1985	.1990	.1990	N
Super 50; Century 60	V	IH	8-4x3½	322.0	8.40	9.00[5]	CI	2	1	51.20	236-4600[6]	330-3000[7]	450	3825	13.43	18.33	.733	AA	Cg,Ts,Ds,A	19.96	.0280	.0017	.0017	.2145	.2170	.2170	N
Roadmaster 70	V	IH	8-4x3½	322.0	9.00	N	CI	2	1	51.20	236-4600[8]	330-3000[9]	450	4300	14.91	20.34	.733	AA	Cg,Ts,Ds,A	19.96	.0280	.0017	.0017	.2145	.2170	.2170	N
Cadillac 60, 62, 75	V	IH	8-3½x3½	331.0	9.00	N	CI	2	1	46.80	250-4600[4]	345-2800	400[5]	4370	14.71	19.40[6]	.756[7]	AA	T,Cg,Sz	20.00	.0290	.0009	.0007	.1870	.1870	.1900	N
Chevrolet One-Fifty, Two-Ton, Bel Air 6	IL	IH	6-3½x3½	235.5	7.50	N	CI	2	2	30.40	123-3800[8]	207-2000[9]	475[10]	3115	15.35	29.36[11]	.822[12]	AA	Cg,Tc,Ce,Fh	10.88	.0370	.0008		.2015	.2015	.2015	N
One-Fifty, Two-Ton, Bel Air 8	V	IH	8-3½x3	265.0	8.00	N	CI	2	2	45.00	162-4400[13]	257-2200[14]	475[10]	3075	13.49	22.67	.611	AA	Cg,Tc,Co,Fh,Se	10.77	.0385	.0008		.2148	.2148	.2073	N
Corvette 2934	IL	IH	6-3½x3½	235.5	8.00	N	CI	2	1	30.40	150-4200	223-2400	475[5]	2706	13.61	21.37	.637	AA	Fh,Tc,Ov,Ce	10.88	.0135	.0008		.1880	.1880	.1880	N
Chrysler Windsor DeLuxe C-67	V	IH	8-3½x3½	301.6	8.00	N	CI	2	1	42.20	180-4400	275-2400	475	3825	14.70	23.84	.623	AA	Sb,Cg,Tc	20.10	.0310	.0010		.1860	.1860	.1860	N
N.Y. DeL. C68, Imp. C68, Cr. Imp. C70	V	IH	8-3½x3½	331.0	8.50	N	CI	2	1	46.80	250-4600	340-2800	475	4160	14.08	18.64	.756	AA	Set,Cg,Sz,Tc	20.60	.0230	.0010		.2040	.2040	.2040	N
De Soto Firedome S-21	V	IH	8-3½x3½	291.0	7.50	N	CI	2	1	44.30	200-4400	274-2800	475	3940	15.26	22.20	.687	AA	Sb,Cg,Tc	19.20	.0320	.0010		.1820	.1820	.1820	N
Firedome S-22	V	IH	8-3½x3½	291.0	7.50	N	CI	2	1	44.30	185-4400	245-2800	475	3870	15.02	23.62	.636	AA	Sb,Cg,Tc	19.20	.0320	.0010		.1820	.1820	.1820	N
Dodge Coronet D-56-1, Royal D-56-2	V	IH	8-3½x3½	270.0	7.60	N	CI	1	2	42.20	175-4400[14]	240-2400[15]	475	3395	14.43	22.26	.648	AA	Sb,Cg,Tc	16.20	.0300	.0010		.1880	.1880	.1880	N
Custom Royal D-56-3	V	IH	8-3½x3½	270.0	7.60	N	CI	1	2	42.20	183-4400[14]	245-2400[15]	475	3485	14.76	21.76	.678	AA	Sb,Cg,Tc	16.20	.0300	.0010		.1880	.1880	.1880	N
Coronet D-56-1	IL	L	6-3½x4½	230.0	7.40	N	CI	2	1	35.40	123-3600	194-1600	475	3295	16.50	30.86	.535	AA	Us,Cg,Tc	15.80	.0300	.0007		.1690	.1690	.1720	.172
Ford Mainline, Customline, Fairlane 6	IL	IH	6-3½x3½	223.8	7.50	N	CI	2	1	31.54	120-4000	195-1800	500	3108	16.17	30.05	.536	AA	Au,So,Cg,Fh,Tc	19.22	.0235	.0016	.0009	.2105	.2105	.2105	N
Mainline, Customline, Fairlane 8	V	IH	8-3½x3½	272.0	7.80	8.50	CI	2	1	42.05	162-4400[16]	258-2200[17]	500	3216	13.86	22.94	.586	AA	Au,So,Cg,Fh,Tc	18.70	.0235	.0016	.0009	.2105	.2105	.2105	N
Thunderbird 40A, 40B	V	IH	8-3½x3½	292.0	8.10	8.50	CI			46.80	193-4400[18]	280-2600[19]	500	2986	11.94	18.06[20]	.661[21]	AA	Au,So,Cg,Fh,Tc	19.41	.0020	.0016	.0009	.2110	.2110	.2060	N
Hudson Wasp 35540	IL	L	6-3x4½	202.0	7.50	8.00	CI	2	2	21.60	115-4000[17]	158-1400[22]	550[23]	3294	16.11	28.30	.500	AA	Vr,Cg	10.13	.0260	.0020	.0015	.1740	.1740	.1560	.156
Hornet 35560	IL	L	6-3½x4½	308.0	7.50	N	Al	2	2	34.88	160-3800[24]	264-1800[25]	555	3485	13.47	21.84	.519	AA	Vr,Cg	18.56	.0285	.0025	.0015	.2060	.2060	.2060	.206
Hornet 35580	V	IH	8-3½x3½	320.0	7.60	N	CI	2	2	46.50	208-4200	300-2300	450[23]	3836	11.99	18.30	.650	AA	Cg,Sa,Tc	22.29	.0240	.0013	.0008	.2035	.2035	.2035	N
Lincoln Custom 73A, Special Custom 72B	V	IH	8-3½x3½	341.0	8.50	N	CI	2	1	49.60	225-4400	342-2500	450[5]	4235	13.00	21.04	.660	AA	Au,So,Cg,Fh,Tc	22.93	.0277		.0010	.2218	.2218	.2143	N
Mercury Custom, Monterey	V	IH	8-3½x3½	292.0	7.60	N	CI	2	1	46.80	188-4400	274-2500	500[23]	3450	13.53	21.01	.644	AA	Au,Sa,Cg,Fh,Tc	19.57	.0255	.0017	.0009	.2116	.2116	.2086	N
Montclair	V	IH	8-3½x3½	292.0	8.50	N	CI	2	1	46.80	198-4-00	286-2500	500[23]	3480	13.67	20.18	.676	AA	Au,Sa,Cg,Fh,Tc	19.57	.0255	.0017	.0009	.2116	.2116	.2086	N
Nash Statesman 5540	IL	L	6-3½x4½	195.6	7.45	8.00	CI	2	2	23.44	100-3800[24]	155-1600[25]	550[23]	3134	16.56	36.34	.511	AA	So,Tc	13.88	.0185	.0018	.0009	.1690	.1690	.1720	.173
Ambassador 5560	IL	IH	6-3½x4½	252.6	7.60	N	CI	2	2	29.40	130-3700[26]	220-1600[27]	550[23]	3539	15.99	31.06	.519	AA	So,Tc	15.57	.0225	.0018	.0021	.1690	.1690	.1722	.182
Ambassador 5580	V	IH	8-3½x3½	320.0	7.80	N	CI	2	2	46.50	208-4200	300-2300	550[23]	3794	13.42	20.65	.650	AA	Cg,Sa,Tc	22.29	.0240	.0013	.0008	.2035	.2035	.2035	N
Nash-Hudson Metropolitan 541, 542	IL	IH	4-2½x3½	73.2	7.20	N	CI	2	2	10.63	42-4500	62-2400	600	1875	32.45	56.56	.574	AA	So,A	7.58	.0150	.0019	.0009	.1190	.1190	.1190	.124
Rambler 5510	IL	L	6-3½x4½	195.6	7.30	7.90	CI	2	2	23.44	90-3800	150-1600	550[26]	2630	16.00	34.78	.460	AA	Ns,Tc	13.59	.0185	.0009	.0009	.1690	.1690	.1720	.173
Oldsmobile 88	V	IH	8-3½x3½	324.3	8.50	N	CI	1	2	48.00	185-4000	320-2000	425	2707	12.97	22.74	.570	AA	Au,Cg,Tc,Set	21.70	.0290	.0013	.0008	.2070	.2070	.2010	N
Super 98, Ninety-Eight	V	IH	8-3½x3½	324.3	8.50	N	CI	1	2	48.00	202-4000	332-2400	425	2762	13.14	21.10	.623	AA	Au,Cg,Tc,Set	21.70	.0290	.0013	.0008	.2070	.2070	.2010	N
Packard Clipper DeLuxe, Super 5540	V	IH	8-3½x3½	326.0	8.80	N	CI	2	1	46.80	225-4600	325-2600	450	3680	13.06	18.58	.703	AA	Cg,Au,Fh,Sa,Tc	22.29	.0240	.0013	.0008	.2035	.2035	.2035	N
Clipper Custom 5560	V	IH	8-4x3½	352.0	8.50		CI	2	1	51.20	245-4800	355-2600	450	3985	12.46	17.90	.696	AA	Cg,Au,Fh,Sa,Tc	24.78	.0240	.0013	.0008	.2130	.2130	.2130	N
Packard 5580	V	IH	8-4x3½	352.0	8.50		CI	2	1	51.20	260-4800[28]	358-2600[29]	450	4275	13.57	18.37	.739	AA	Cg,Au,Fh,Se,Tc	24.76	.0240	.0013	.0008	.2130	.2130	.2130	N
Plymouth Plaza, Belvedere, Savoy P26	IL	L	6-3½x4½	230.0	7.40	N	CI	1	2	25.40	117-3600	194-1600	475	3129	15.78	31.02	.509	AA	Us,Cg,Tc	15.80	.0300	.0007		.1690	.1690	.1720	.172
Plaza, Belvedere, Savoy P27	V	IH	8-3½x3½	241.6	7.60	N	CI	1	2	37.90	157-4400	217-2400	475	3246	15.54	23.86	.651	AA	Se,Cg,Sb,Ns,Tc	16.40	.0300	.0013		.1810	.1810	.1840	N
Plaza, Belvedere, Savoy P27	V	IH	8-3½x3½	260.0	7.60	N	CI	1	2	40.80	167-4400[31]	231-2400[32]	475	3246	14.41	22.43	.642	AA	Se,Cg,Sb,Ns,Tc	16.40	.0300	.0010		.1850	.1850	.1850	N
Pontiac Chieftain 58-27, Star Chief 58-28	V	IH	8-3½x3½	287.2	8.00	7.40	CI	1	2	45.00	180-4800[33]	264-2400[34]	465[35]	3511	13.97	22.28[36]	.627[37]	AA	Cg,Sa,Set,Tc	21.33	.0275	.0010	.0010	.2010	.1910	.1940	N
Studebaker Champion 16G6	IL	L	6-3x4½	186.6	7.50	N	CI	2	1[38]	21.60	101-4000	152-1800	550	2800	17.76	32.67	.544	Lyn	Cg,T	9.38	.0173	SFF		.1635	.1485	.1685	N
Commander 16G8 (Early)	V	IH	8-3½x2½	224.3	7.50	N	CI	2	1[38]	40.60	140-4500	202-2800	550	3095	16.03	28.68	.624	Lyn	Cg,T	17.34	.0195	SFF		.1938	.1938	.1938	N
Commander 16G8 (Late)	V	IH	8-3½x3½	259.2	7.50	8.00	CI	2	1[38]	40.60	162-4500[39]	250-2800	550	3085	13.67	22.19[40]	.625[41]	Lyn	Cg,T	16.21	.0195	SFF		.1938	.1938	.1938	N
President 8H	V	IH	8-3½x3½	259.2	7.50	8.00	CI	2	1[38]	40.60	175-4500[42]	250-3000[43]	550	3295	14.20	21.17[44]	.675[45]	Lyn	Cg,T	16.21	.0195	SFF		.1938	.1938	.1938	N
Willys Bermuda, Custom 6-226-A	IL	L	6-3½x4½	226.2	7.30	N	CI	2	1	26.33	115-3650	190-1800	500[23]	2778	14.49	28.80	.500	AA	Cg,T,Tc	16.31	.0250	.0012	SFF	.1863	.1863	.1963	.196

ABBREVIATIONS

#—Shipping weight plus 500 lbs. for passengers, oil, water and gasoline.

1—Compression ratio change not obtained with optional head but with changes in cylinder head gasket on series 50 and 60 with Dynaflow. On series 40, ratio change is made with piston change with Dynaflow.

2—With Dynaflow.

3—16.82 with Dynaflow.

4—62678, 370-4800.

5—In drive.

6—62678, 18.04.

7—62678, .816.

8—136-4200 with Powerglide.

9—209-2200 with Powerglide.

10—425 with Powerglide in drive.

11—26.58 with Powerglide.

12—.577 with Powerglide.

13—180-4600 with four barrel carburetor and dual exhaust.

14—193-4400 with four barrel carburetor and dual exhaust.

15—245-2800 with four barrel carburetor and dual exhaust.

16—182-4400 with four barrel carburetor and dual exhaust.

17—268-2600 with four barrel carburetor and dual exhaust.

18—193-4400 with Fordomatic.

19—286-2500 with Fordomatic.

20—17.61 with Fordomatic.

21—.678 with Fordomatic.

22—450 with Hydramatic and Ultramatic.

23—450 with Hydramatic.

24—110-4000 with dual carburetors and 8.00 compression ratio.

25—155-2000 with dual carburetors and 8.00 compression ratio.

26—140-4000 with dual carburetors.

27—230-2000 with dual carburetors.

28—475 with Hydramatic.

29—Caribbean, 275-4800.

30—Caribbean, 355-2800.

31—177-4400 with power package.

32—231-2800 with power package.

33—173-4400 with 7.40 compression ratio.

34—256-2400 with 7.40 compression ratio.

35—400 with Hydramatic.

36—23.18 with 7.40 compression ratio.

37—.602 with 7.40 compression ratio.

38—Two with automatic transmission.

39—166-4500 with 8.00 compression ratio.

40—21.66 with 8.00 compression ratio.

41—.640 with 8.00 compression ratio.

42—Late models, 180-4500 with 7.00 compression ratio and 185-4500 with 8.00 compression ratio.

43—Late models, 258-2800.

44—Late models, 20.58 with 7.00 compression ratio and 20.03 with 8.00 compression ratio.

45—Late models, .694 with 7.00 compression ratio and .714 with 8.00 compression ratio.

46—260-2800 with four barrel carburetor and dual exhaust.

47—126-4000 with dual carburetors and aluminum head.

48—170-4000 with dual carburetors.

49—168-2400 with dual carburetors and aluminum head.

50—278-2300 with dual carburetors.

51—575 with overdrive and 500 with Hydramatic.

52—With Ultramatic.

A—Anodized.

AA—Aluminum alloy.

Al—Aluminum.

Au—Autothermic.

Ce—Controlled expansion.

Cg—Cam ground.

CI—Cast iron.

Ds—Divorced skirt.

Fh—Flat head.

Hs—Horizontal slot. IH—In head.

IL—In line.

L—"L" head, valves at side.

Lyn—Lynite.

N—No or none.

Ns—Nelson design.

Ov—Oval.

Sb—Steel band.

SFF—Selective feeler fit.

Se—Solid skirt.

Sp—Split skirt.

Ss—Slipper type skirt.

Set—Steel strut.

St—Stannate coated.

T—"T" slot.

Tc—Tin coated.

Ts—Transverse slot.

Us—"U" slot.

V—"V" type engine.

Vr—V-rib type.

For Directory of Car Manufacturers listed above, see page 263

PISTON RINGS, PISTON PINS, AND CONNECTING RODS

PASSENGER CAR MAKE AND MODEL	Bore	PISTON RINGS: Type—Oil or Compression No. 1	No. 2	No. 3	No. 4	No. Rings Above Piston Pin	Compression: Material	Coating	Width	Gap	Maximum Wall Thickness	Oil: Material	Coating	Width	Gap	Maximum Wall Thickness	Location of Expanders	PISTON PIN: Material	Length	Diameter	Type: Locked in—	Bushing: Location	Bushing: Material	Clearance: In Piston	In Rod	Direction Offset in Piston	CONNECTING RODS: Material	Weight (oz.)	Length (center to center)	Bearing: Material	Type (cast or removable)	Effective Length	Clearance	End Play
Buick: 8, 40	3⅛	C	C	O	N	3	CI	Lub	.0780	.015	.181	St	N	.1860	.025	.135	OR	1116	3.1000	.9400	R	N	.....	.0004	N	N	1045	22.16	6	Ash	Re	.8810	.0011	.007
8, 50, 60, 70	4	C	C	O	N	3	CI	Lub	.0780	.015	.209	St	N	.1860	.025	.135	OR	1116	3.4000	.9400	R	N	.....	.0004	N	N	1045	22.16	6	Ash	Re	.8810	.0011	.007
Cadillac: 8, 60, 62, 75	3⅛	C	C	O	N	3	(a)	(b)	.0781	.015	(c)	CI	N	.1875	1015	.165	N	1045	3.0630	1.0000	R	N	.....	.0001	N	MT	1041	23.49	6½	Dsb	Re	.6175	.0012	.011
Chevrolet: 6, 1900, 2100, 2400	3⅛	C	C	O	N	3	CI	WR	.0933	.012	.178	St	Ch	.1845	.035	.153	OR	CS	3.1838	.8663	R	N	.....	.0002	N	MT	DFS	31.70	6⅛	Bsb	Re	1.0090	.0010	.008
8, 1500, 2100, 2400	3½	C	C	O	N	3	CI	WR	.0775	.014	.167	St	Ch	.1845	.035	.168	OR	CS	3.1290	.9272	R	N	.....	.0002	N	MT	DFS	19.02	5⅛	Bsb	Re	.8170	.0010	.011
6, 2934	3⅛	C	C	O	N	3	CI	(d)	.0933	(e)	.178	CI	N	.1863	.010	.141	OR	CS	3.2130	.8663	R	N	.....	.0002	N	RI	DFS	30.86	6⅛	Bsb	Re	.9980	.0017	.009
Chrysler: 8, C-67	3⅛	C	C	O	N	3	CI	T	.0780	.015	.169	CI	N	.1860	.015	.140	OR	HMS	3.0450	.9840	F	R	BrS	.0003	.0003	RI	HMFS	25.20	6½	Bsb	Re	.8980	.0010	.010
8, C-66, C-68, C-70	3⅛	C	C	O	N	3	CI	T	.0780	.015	.190	CI	N	.1860	.015	.145	OR	HMS	3.1450	.9840	F	R	BrS	.0003	.0003	RI	HMFS	25.70	6½	Bsb	Re	.8980	.0010	.010
De Soto: 8, S-21, S-22	3⅛	C	C	O	N	3	CI	T	.0780	.015	.194	CI	N	.1860	.015	.150	OR	HMS	3.0650	.9220	F	R	BrS	.0003	.0003	RI	HMFS	22.80	6½	Bsb	Re	.8120	.0010	.010
Dodge: 8, D-55-1, D-55-2, D-56-2	3⅛	C	C	O	N	3	CI	T	.0780	.015	.173	CI	N	.1860	.015	.135	OR	HMS	2.8800	.8580	F	R	BrS	.0003	.0003	RI	HMFS	21.29	6⅛	Bsb	Re	.8100	.0010	.010
8, D-56-1	3¼	C	C	O	O	4	CI	(f)	.0940	.012	.162	CI	N	.1860	.012	.150	N	HMS	2.7460	.8580	F	R	BrS	.0003	.0003	N	HMFS	27.90	7⅛	Bsb	Re	.9300	.0010	.009
Ford: 6	3½	C	C	O	N	3	CI	(g)	.0933	.015	.181	St	Ch	.1863	.034	.171	OR	AS	3.0230	.9122	F	R	Br	.0002	.0002	RI	FS	29.53	6½	Bsb	Re	1.0340	.0013	.006
8	3⅞	C	C	O	N	3	CI	(g)	.0993	.015	.181	St	Ch	.1863	.034	.171	OR	AS	3.0230	.9122	F	R	Br	.0002	.0002	RI	FS	24.06	6⅛	Cle	Re	.7110	.0013	.011
8, 48A, 49B	3¾	C	C	O	N	3	CI	(g)	.0778	.015	.167	St	Ch	.1863	.034	.171	N	AS	3.0230	.9122	F	R	Br	.0002	.0002	RI	FS	24.06	6⅛	Cle	Re	.7110	.0013	.011
Hudson: 6, 35540	3	C	C	O	O	3	CI	(w)	(x)	.007	.145	CI	Gr	(1)	.007	(3)	N	5628	2.4375	.7500	F	R	StB	.0002	HPF	N	1041	24.00	5½	Bsb	Re	.9620	.0020	.010
6, 35560	3½	C	C	O	O	3	CI	(f)	.0780	.010	.176	CI	T	(2)	.010	(4)	N	5628	2.9370	.9680	F	R	StB	.0002	HPF	N	1041	23.90	6½	Bsb	Re	1.3780	.0010	.010
8, 35580	3½	C	C	O	N	3	CI	(h)	.0777	.002	.191	CI	N	.1863	.014	.145	OR	1020	3.2500	.9903	F	R	Br	.0001	.0002	L	St	26.69	6½	Bsb	Re	.9380	.0015	.007
Lincoln: 8, 73A, 73B	3½	C	C	O	N	3	CI	(g)	.0778	.015	.187	CI	N	.1863	.015	.195	OR	AS	3.1690	.9122	F	R	Br	.0002	.0003	RI	FS	28.36	7⅛	Cle	Re	.7990	.0012	.009
Mercury: 8	3⅝	C	C	O	N	3	CI	(g)	.0778	.015	.187	St	Ch	.1863	.035	.171	OR	AS	3.0230	.9122	F	R	Br	.0002	.0002	RI	FS	24.50	6⅛	Cle	Re	.7110	.0013	.011
Nash: 6, 3540	3½	C	C	O	O	4	CI	(h)	.0933	.002	.186	(i)	(j)	(k)	(l)	(m)	N	1016	2.7500	.5594	R	N	.....	.0002	N	RI	FS	25.00	6½	Bsb	Re	.8995	.0015	.010
6, 3560	3½	C	C	O	O	4	CI	(h)	.0933	(n)	.175	(i)	(j)	(k)	(o)	(p)	N	1016	3.0000	.6375	R	R	Br	.0002	N	RI	St	29.00	6½	Bsb	Re	1.2720	.0015	.010
8, 3580	3½	C	C	O	N	3	CI	(h)	.0777	.002	.191	CI	N	.1863	.014	.145	OR	1020	3.2500	.9903	F	R	Br	.0001	.0002	L	St	26.69	6½	Bsb	Re	.9380	.0015	.007
Nash-Hudson: 4, 541, 542	2¾	C	C	C	O	4	CI	Ox	.0778	.010	.104	CI	Ox	.1557	.010	.105	N	NAS	2.2813	.6870	R	N	.....	.0003	N	N	FS	14.80	6½	Bsb	Re	1.0000	.0007	.011
6, 5510	3½	C	C	C	O	4	CI	(b)	(q)	.015	.156	(i)	(j)	(k)	(r)	(m)	N	1016	2.7500	.8094	R	N	.....	.0002	N	RI	DFS	25.00	6½	Bsb	Re	.9985	.0015	.010
Oldsmobile: 8, 88, 98	3⅛	C	C	O	N	3	CI	(s)	.0775	(t)	.194	CI	N	.1863	(t)	.158	OR	1117	3.1200	.9985	F	R	Br	.0001	.0004	RI	1335	29.54	6½	Dsb	Re	.8810	.0019	.007
Packard: 8, 5540	3⅛	C	C	O	N	3	CI	(h)	.0780	.015	.191	CI	NB	.1860	.015	.160	OR	AS	3.2500	.9903	F	R	Br	.0001	.0002	MT	FS	28.69	6⅛	Bsb	Re	.9380	.0015	.007
8, 5560, 5580	4	C	C	O	N	3	CI	(h)	.0780	.019	.200	CI	NB	.1860	.018	.168	OR	AS	3.2500	.9903	F	R	Br	.0001	.0002	MT	FS	28.69	6⅛	Bsb	Re	.9380	.0015	.007
Plymouth: 6, P-26	3⅛	C	C	O	O	4	CI	(f)	.0940	.012	.162	CI	N	.1860	.012	.150	N	HMS	2.7500	.8580	F	R	BrS	.0003	.0003	N	HMFS	27.90	7⅛	Bsb	Re	.9300	.0010	.009
8, P-27	3⅛	C	C	O	N	3	CI	T	.0780	.015	.167	CI	N	.1860	.015	.135	OR	HMS	2.8800	.8580	F	R	BrS	.0003	.0003	RI	HMFS	21.10	6⅛	Bsb	Re	.8100	.0010	.010
Pontiac: 8, 50-27, 50-28	3¼	C	C	O	N	3	CI	(b)	.0780	(s)	.187	St	Ch	.1839	.025	.138	OR	1117	3.0160	.9905	F	R	LB	.0001	.0004	RI	1335	29.70	6½	Dsb	Re	.8900	.0019	.008
Studebaker: 6, 16G6	3	C	C	O	N	3	CI	Fe	(u)	.012	(v)	CI	NB	.1863	.011	.126	OR	5629	2.8250	.7500	R	N	.....	.0002	N	N	1041	19.94	6½	Bsb	Re	.8750	.0011	.007
8, 16G8, 8H	3⅛	C	C	O	N	3	CI	Gr	.0781	.012	.178	CI	Gr	.1875	.012	.141	OR	5126	3.0625	.8750	R	N	.....	.0002	N	N	1141	23.71	6½	Bsb	Re	.8125	.0011	.010
Willys: 6, 6-226-A	3⅛	C	C	O	O	4	CI	(w)	.0933	.012	.196	CI	(x)	.1846	.012	(y)	OR	1019	2.7750	.8562	F	R	Br	.0001	.0004	N	1035	28.60	7	Bsb	Re	1.0630	.0019	.009

ABBREVIATIONS

(a)—Upper, steel; lower, cast iron.
(b)—Upper, chrome; lower, lubrite.
(c)—Upper, .165; lower, .184.
(d)—Upper, chrome; lower, wear resistant.
(e)—Upper, .015; lower, .012.
(f)—Upper, chrome; lower, tin.
(g)—Upper, chrome; lower, phosphate.
(h)—Upper, chrome; lower, ferrox.
(i)—Upper, cast iron; lower, steel.
(j)—Upper, ferrox; lower, lubrite.
(k)—Upper, .1548; lower, .1545.
(l)—Upper, .002; lower, .007.
(m)—Upper, .144; lower, .155.
(n)—Upper, .011; lower, .010.
(o)—Upper, .012; lower, .007.
(p)—Upper, .157; lower, .155.
(q)—Upper, .0925; lower, .0930.
(r)—Upper, .015; lower, .007.
(s)—Upper, chrome; lower, Perfect Circle, lubrite, Sealed Power, grancoral.
(t)—Sealed Power, .012; Perfect Circle, .015.
(u)—Upper, .0938; lower, .1250.
(v)—Upper, .150; lower, .125.
(w)—Upper, chrome; lower, grancoral.
(x)—Upper, grancoral; lower, none.
(y)—Upper, .135; lower, .152.
(z)—Upper, .0778; lower, .0780.
(1)—Upper, .1863; lower, .1548.
(2)—Upper, .1860; lower, .1545.
(3)—Upper, .134; lower, .130.
(4)—Upper, .165; lower, .151.

AS—Alloy steel, heat treated.
Ash—Aluminum, steel backed.
Br—Bronze.
BrS—Bronze, steel backed.
Bsb—Babbitt, steel backed.
C—Compression.
Ch—Chromium.
CI—Cast iron.
Cle—Copper lead, steel backed.
CS—Chromium steel.
DFS—Drop forged steel.
Dsb—Durex, steel backed.
F—Floating.
Fe—Ferrox.
FS—Forged steel.
Gr—Grancoral.
HMFS—High manganese forging steel.
HMS—high manganese steel.
HPF—Hand push fit.
L—Left.
LB—Lead bronze.
Lub—Lubrite.
MT—Toward maximum thrust side.
N—No or none.
NB—None or blued.
NAS—Nickel alloy steel.
O—Oil.
OR—Oil ring.
Ox—Oxidized.
R—Connecting rod.
Re—Removable.
RI—Right.
St—Steel.
StB—Steel backed bushing.
T—Tin.
WR—Wear resistant.

For Directory of Car Manufacturers listed above, see page 263

CRANKSHAFTS, CAMSHAFTS

PASSENGER CAR MAKE AND MODEL	CRANKSHAFT: Material	Weight (lb.)	Vibration Dampener Type	End Thrust Taken Up by Bearing	Crankshaft End Play	Main Bearing: Material	Type (cast or removable)	Clearance	Journal Diameter and Bearing Effective Length: No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	Connecting Rod Journal Crankpin Diameter	CAMSHAFT: Material	Bearings: Material	Number	Type of Drive: Gear or Chain	Crankshaft Gear or Sprocket Material	Camshaft Gear or Sprocket Material	Timing Chain: Make	No. of Links	Width	Pitch
Buick 8, 40	1145	56.70	N	5	.0060	Dsb	Re	.0013	2.4985x1.2500	2.4985x1.2500	2.4985x1.2500	2.4985x1.2500	2.4985x1.7650	None	None	2.2495	FS	Bsb	5	Ch	1140	CI	LS	82	.6960	.500
8, 50, 60, 70	1145	58.70	RA	5	.0060	Dsb	Re	.0013	2.4985x1.2500	2.4985x1.2500	2.4985x1.2500	2.4985x1.2500	2.4985x1.7650	None	None	2.2495	FS	Bsb	5	Ch	1140	CI	LS	82	.6960	.500
Cadillac 8, 60, 62, 75	1145	70.00	RA	5	.0030	Dsb	Re	.0017	2.5000x .9070	2.5000x .9070	2.5000x .9070	2.5000x .9070	2.5000x1.6220	None	None	2.2500	CI	Bsb	5	Ch	1110	1115	LS	48	.6875	.500
Chevrolet 6, 1500, 2100, 2400	DFS	70.90	Osc	3	.0085	Bsb	Re	.0018	2.6940x .8730	2.7150x .9070	2.7460x .9060	2.7770x .9090	None	None	None	2.3115	CI	Bsb	4	G	St	BFS	N			
8, 1500, 2100, 2400	DFS	47.75	Osc	5	.0040	Bsb	Re	.0021	2.2963x .7020	2.2963x .7020	2.2963x .7020	2.2963x .7020	2.2963x1.1600	None	None	1.9995	CI	Bsb	5	Ch	St	CI	LS	48	.6750	.500
6, 2934	DFS	70.90	Osc	3	.0065	Bsb	Re	.0015	2.6940x1.3894	2.7150x1.2500	2.7460x1.2498	2.7770x2.9000	None	None	None	2.3115	CI	Bsb	4	G	St	Al	N			
Chrysler 6, C67, C68, C69, C70	DFS	NA	DDT	3	.0045	Bsb	Re	.0010	2.5000x .8750	2.5000x .8750	2.5000x .8750	2.5000x .8750	2.5000x1.5900	None	None	2.2495	CI	Bsb	5	Ch	HMS	CI	Mor	66	1.1250	.375
De Soto 6, S-21, S-22	DFS	NA	DDT	3	.0045	Bsb	Re	.0010	2.3800x .8100	2.3800x .8100	2.3800x .8100	2.3800x .8100	2.3800x1.5300	None	None	2.0620	CI	Bsb	5	Ch	HMS	CI	Mor	66	1.1250	.375
Dodge 6, D56-1, D56-2, D56-3	DFS	NA	N	3	.0045	Bsb	Re	.0010	2.3800x .8100	2.3800x .8100	2.3800x .8100	2.3800x .8100	2.3800x1.5300	None	None	1.9400	CI	Bsb	5	Ch	HMS	CI		66	1.1250	.380
6, D-56-1	DFS	NA	RD	4	.0050	Bsb	Re	.0010	2.5000x1.2000	2.5000x1.0000	2.5000x1.0000	2.5000x1.5900	None	None	None	2.0600	CI	Bsb*	4	Ch	HMS	CI		48	1.0000	.500
Ford 6	AI	69.25	RF	3	.0060	Bsb	Re	.0013	2.4986x .9430	2.4986x .9540	2.4986x .8930	2.4986x1.1790	None	None	None	2.2904	CI	Bsb	4	Ch	St	CI	L-M	56	1.0000	.375
8	AI	80.43	RF	3	.0060	Bsb	Re	.0013	2.4986x .7280	2.4986x .7280	2.4986x .6620	2.4986x .7280	2.4986x .7280	None	None	2.1884	CI	Bsb	5	Ch	St	CI	L-M	56	1.0000	.375
8, 49A, 49B	AI	80.30	RF	3	.0040	Cls	Re	.0013	2.4986x .7280	2.4986x .7280	2.4986x .6620	2.4986x .7280	2.4986x .7280	None	None	2.1884	CI	Bsb	5	Ch	St	CI		56	1.0000	.375
Hudson 6, 26540	1045	77.13	Ru	3	.0060	Bsb	Re	.0010	2.4995x1.3125	2.4995x1.2500	2.4995x1.4956	2.4995x1.5000	None	None	None	1.9375	CI	Bsb	4	Ch	St	CI	Mor	60	1.0000	.375
6, 26560	DFS	67.80	Ru	3	.0060	Bsb	Re	.0010	2.4995x1.4375	2.4995x1.3750	2.4995x1.6250	2.4995x1.7500	None	None	None	2.1250	CI	Bsb	4	Ch	St	CI	Mor	60	1.2500	.375
8, 26560	CS	55.00	RF	5	.0060	Bsb	Re	.0015	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x1.7300	None	None	2.2520	CS	Bsb	5	Ch	St	CI	Mor	64	1.0000	.375
Lincoln 8, 72A, 72B	AI	67.00	RF	3	.0060	Bsb	Re	.0017	2.6239x .7300	2.6239x .7300	2.6239x .6540	2.6239x .7300	2.6239x1.4550	None	None	2.2494	AI	Bsb	5	Ch	St	CI		50	1.2300	.900
Mercury 8	AI	80.99	RF	3	.0040	Cls	Re	.0013	2.4984x .7280	2.4984x .7280	2.4984x .6620	2.4984x .7280	2.4984x .7280	None	None	2.1884	AI	Bsb	5	Ch	St	CI		56	1.0000	.375
Nash 6, 6340	FS	66.80	R-F	1	.0050	Bsb	Re	.0018	2.4844x1.1250	2.4844x1.1250	2.4844x1.1250	2.4844x1.5312	None	None	None	2.0952	CI	Bsb	4	Ch	St	110	Mor	60	1.0000	.375
6, 6560	DFS	70.50	R-F	4	.0050	Bsb	Re	.0014	2.4844x1.2500	2.4844x .9375	2.4844x .9375	2.4844x1.7500	2.4844x .9375	2.4844x .9375	2.4844x1.6250	2.0007	CI	Bsb†	4	Ch	St	110	Mor	60	1.0000	.375
8, 6560	CS	55.00	RF	5	.0060	Bsb	Re	.0015	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x1.7360	None	None	2.2520	CS	Bsb	5	Ch	St	CI	Mor	64	1.0000	.375
Nash-Hudson 4, 541, 542	FS	26.90	N	2	.0050	Bsb	Re	.0014	2.0008x1.3750	2.0008x1.3700	2.0008x1.3750	None	None	None	None	1.6762	FS	Bsb	3	Ch	CI	CI	Ren	52	.9000	.375
6, 6510	DFS	65.50	R-F	1	.0050	Bsb	Re	.0018	2.4844x1.1250	2.4844x1.1250	2.4844x1.1250	2.4844x1.9313	None	None	None	2.0952	CI	Bsb	4	Ch	1117	110	Mor	60	1.0000	.375
Oldsmobile 8, 88, 98	1145	58.14	RA	5	.0060	Dsb	Re	(a)	2.5000x1.7500	2.5000x1.7500	2.5000x1.7500	2.5000x1.7500	2.6250x1.3780	None	None	2.2500	CI	Bce	5	Ch	(b)	CI	L-M	(c)	(d)	(e)
Packard 8, 5540	CS	55.00	RF	5	.0060	Bsb	Re	.0015	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x1.7360	None	None	2.2500	CI	Bsb	5	Ch	St	CI	Mor	64	1.0000	.375
8, 5560, 5580	CS	55.00	RF	5	.0060	Cls*	Re	.0015	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x .9500	2.4990x1.7360	None	None	2.2500	CI	Bsb	5	Ch	St	CI	Mor	64	1.0000	.375
Plymouth 6, P-26	DFS	NA	RD*	4	.0050	Bsb	Re	.0010	2.5000x1.2000	2.5000x1.0000	2.5000x1.0000	2.5000x1.5900	None	None	None	2.0600	CI	Bsb*	4	Ch	HMS	CI	Mor	48	1.0000	.500
8, P-27	DFS	NA	N	3	.0050	Bsb	Re	.0010	2.3800x .8100	2.3800x .8100	2.3800x .8100	2.3800x .8100	2.3800x1.5300	None	None	1.9400	CI	Bsb	5	Ch	HMS	CI	Mor	66	1.1250	.380
Pontiac 8, 55-27, 55-28	1045	58.00	HB	4	.0060	Dsb	Re	.0018	2.5000x .9400	2.5000x .9400	2.5000x .9400	2.5000x .9100	2.5000x1.5600	None	None	2.2500	AI	Bsb	5	Ch	St	AI	Mor	60	1.0000	.380
Studebaker 6, 16G8	1046	67.00	RM	1	.0045	Bsb	Re	.0014	3.0625x1.0313	3.0625x1.0938	3.0625x1.0938	3.0625x1.5000	None	None	None	1.8125	CI	Bsb	4	G	CI	CSH	N			
8, 16G8, 6H	1046	(f)	RM	1	.0045	Bsb	Re	.0018	2.5000x1.0000	2.5000x .8750	2.5000x .8750	2.5000x .8750	2.5000x1.5156	None	None	2.0000	CI	Bsb	5	G	CI	CSH	N			
Willys 6, 6-226-A	1045	77.00	V	4	.0040	Bsb	Re	.0014	2.3745x1.0620	2.3745x1.2500	2.3745x1.2500	2.3745x1.3210	None	None	None	2.0623	1019	Bsb	4	Ch	1019	CI	L-M	46	1.0000	.500

ABBREVIATIONS

*—Number four bearing is of cast iron.
†—Number one bearing is of cast iron.
^—Number five bearing is babbitt, steel backed.
■—P-26-1 has none.
'—Rear, .0021.
(a)—Front, .0013; rear, .0028; all others, .0018.
(b)—Link Belt, 1140; Morse, 1117 or 1118.
(c)—Link Belt, 48; Morse, 64.
(d)—Link Belt, .8438; Morse, .8750.
(e)—Link Belt, .500; Morse, .375.
(f)—Early 16G8, 50.00; late 16G8 and all 6H, 55.00.
Al—Alloy iron.
Al—Aluminum.
Bce—Babbitt or copper lead bronze, steel backed.
BFS—Bakelite and fabric composition with steel hub.
Bsb—Babbitt, steel backed.
Ch—Chain.
CI—Cast iron
Cls—Copper lead, steel backed.
CS—Cast steel.
CSH—Celeron with steel hub.
DDT—Damped dynamic torsional.
DFS—Drop forged steel.
Dsb—Durex, steel backed.
FS—Forged steel.
G—Gear.
HB—Harmonic balancer.
HMS—High manganese steel.
LB—Link Belt.
L-M—Link Belt or Morse.
Mor—Morse.
N—No or none.
NA—Not available.
Osc—Oscillating (rubber floating).
RA—Rubber absorbtion.
RD—Rubber dynamic.
Re—Removable.
Ren—Renold.
RF—Rubber floated.
R-F—Rubber and friction.
RM—Rubber mounted disc.
Ru—Rubber.
St—Steel.
V—Viscous.

For Directory of Car Manufacturers listed above, see page 263

VALVES, INTAKE AND EXHAUST

PASSENGER CAR MAKE AND MODEL	Hydraulic Lifters	Special Provision for Valve Rotation (Intake or Exhaust)	Rocker Ratio—to-1	INTAKE												EXHAUST											
							Seat		Stem			Springs							Seat		Stem			Springs			
												Pressure (lb)		Length (in)									Pressure (lb)		Length (in)	
				Material	Overall Length	Actual Overall Head Diameter	Angle (Deg.)	Insert Material	Diameter (In.)	Guide Clearance	Lift (In.)	Valve Closed	Valve Open	Valve Closed	Valve Open	Material	Overall Length	Actual Overall Head Diameter	Angle (Deg.)	Insert Material	Diameter (In.)	Guide Clearance	Lift (In.)	Valve Closed	Valve Open	Valve Closed	Valve Open
Buick	S, 40	V	N	1.500	NCS	4.704	1.750	45	N	.3720	.0025	.358	43.0*	89.0*	1.500*	1.142*	(a)	4.704	1.375	45	N	.3714	.0030	.350	43.0†	87.0†	1.500†	1.150†
	S, 50, 60	V	N	1.500	NCS	4.704	1.750	45	N	.3720	.0025	.378	43.0*	91.0*	1.500*	1.122*	(a)	4.704	1.375	45	N	.3714	.0030	.378	43.0†	91.0†	1.500†	1.122†
	S, 70	V	N	1.500	NCS	4.704	1.750	45	N	.3720	.0025	.378	43.0*	91.0*	1.500*	1.122*	(a)	4.704	1.375	45	N	.3714	.0030	.378	43.0†	91.0†	1.500†	1.122†
Cadillac	S, 60, 62, 75	V	N	1.650	(b)	(c)	1.750	44	N	.3420	.0015	.411	65.0	157.0	1.696	1.285	(d)	4.956	1.562	44	N	.3418	.0018	.411	65.0	157.0	1.696	1.285
Chevrolet	6, 1500, 2100, 2400	N	N	1.477	SNCS	6.399	1.875	31	N	.3414	.0019	.394	65.0	160.0	1.821	1.805	SNCS	4.918	1.500	46	N	.3414	.0019	.312	66.0	160.0	1.821	1.805
	6, 1500, 2100, 2400*	V	N	1.477	SNCS	6.399	1.875	31	N	.3414	.0019	.409	78.0	202.0	1.858	1.462	CNMS	4.923	1.500	46	N	.3414	.0019	.400	78.0	202.0	1.858	1.462
	8, 1500, 2100, 2400	(e)	N	1.488	SNCS	4.912	1.720	46	N	.3419	.0019	(f)	75.0	150.0	1.696	1.366	CNMS	4.923	1.500	46	N	.3414	.0022	(g)	75.0	150.0	1.696	1.366
	6, 2934	N	N	1.477	SCS	6.379	1.875	31	N	.3414	.0019	.405	55.0*	150.0*	1.890*	1.490*	SCS	4.928	1.500	45	N	.3394	.0039	.414	55.0*	150.0*	1.890*	1.490*
Chrysler	S, C-67	V	N	1.500	SCS	4.790	1.810	45	N	.3720	.0020	.391	72.0	169.0	1.680	1.312	MCNS	4.620	1.500	45	N	.3720	.0030	.367	72.0	169.0	1.680	1.312
	S, C-62, C-68, C-70	V	N	1.500	SCS	5.030	1.940	45	N	.3720	.0020	.391	55.04	126.04	1.6804	1.3126	MCNS	5.030	1.750	45	ACI	.3720	.0030	.367	55.04	126.04	1.6804	1.3126
De Soto	S, S-21, S-22	V	N	1.500	SCS	4.810	1.840	45	N	.3720	.0020	.390	20.04	92.04	1.6804	1.3104	CNS	4.800	1.500	45	ACI	.3720	.0030	.390	20.04	92.04	1.6804	1.3104
Dodge	S, D-33-1, D-33-2	V	N	1.500	SCS	4.260	1.720	45	N	.3700	.0020	.360	53.0	140.0	1.680	1.310	CNS	4.200	1.470	45	N	.3700	.0030	.360	53.0	140.0	1.680	1.310
	S, D-33-3	V	N	1.500	SCS	4.830	1.750	45	N	.3700	.0020	.360	40.0‡	105.0‡	1.690‡	1.310‡	CNS	4.750	1.410	45	N	.3700	.0030	.360	40.0‡	105.0‡	1.690‡	1.310‡
	S, D-36-1	N	N	N	SCS	4.810	1.530	45	N	.3400	.0020	.365	42.0	115.0	1.750	1.380	CNS	4.840	1.410	45	ACI	.3400	.0040	.365	42.0	115.0	1.750	1.380
Ford	6	N	Be	1.420	CS	5.110	1.780	45½	N	.3420	.0015	.325	58.0	132.0	1.620	1.500	CAS	5.080	1.510	45½	N	.3410	.0025	.325	58.0	132.0	1.620	1.500
	8, 40A, 40B	N	Be	1.430	CS	5.110	1.780	45½	N	.3420	.0015	.360	58.0	132.0	1.620	1.500	CAS	5.080	1.510	45½	N	.3410	.0025	.360	58.0	132.0	1.620	1.500
Hudson	S, 39540	N	N	N	6045	5.045	1.500	45	N	.3417	.0020	.346	44.0	120.0	1.953	1.607	(n)	5.045	1.395	46	N	.3407	.0030	.346	44.0	120.0	1.953	1.607
	S, 39560	N	N	N	6045	5.730	1.631	45	N	.3417	.0023	.346	77.0	189.0	2.188	1.842	(n)	5.730	1.556	45	N	.3407	.0030	.346	77.0	189.0	2.188	1.842
	S, 39580	V	N	1.500	SCS	5.712	1.937	30	N	.3725	.0015	.374	82.0	165.0	1.750	1.375	(h)	5.690	1.687	45	N	.3715	.0025	.374	82.0	165.0	1.750	1.375
Lincoln	S, 73A, 73B	Y	Be	1.500	CS	5.270	2.000	45½	N	.3420	.0015	.394	70.5	169.0	1.800	1.420	CAS	5.250	1.510	45½	N	.3410	.0025	.394	70.5	169.0	1.800	1.420
Mercury	8	N	Be	1.430	CS	5.110	1.780	45½	N	.3420	.0015	.360	58.0	132.0	1.620	1.500	CAS	5.080	1.510	45½	N	.3410	.0025	.360	58.0	132.0	1.620	.1900
Nash	S, 6549	N	N	N	3140	4.781	1.594	45	(i)	.3410	.0031	.340	39.0	78.5	1.750	1.438	(j)	4.781	1.344	45	(j)	.3410	.0031	.340	39.0	78.5	1.750	1.438
	S, 5560	N	N	1.475	3140	5.484	1.787	30	N	.3730	.0030	.382	56.5	149.0	1.813	1.438	(j)	5.484	1.469	45	N	.3725	.0030	.378	56.5	149.0	1.813	1.438
	S, 5580	V	N	1.500	SCS	5.712	1.937	30	N	.3725	.0015	.374	82.0	165.0	1.750	1.375	(h)	5.690	1.687	45	N	.3715	.0025	.374	82.0	165.0	1.750	.1375
Nash-Hudson	4, 941, 942	N	N	1.430	SCS	4.313	1.375	45	N	.3420	.0020	.325	77.5	130.0	1.531	1.200	NCS	4.231	1.188	45	N	.3420	.0015	.325	77.5	130.0	1.531	1.200
	6, 961*	N	N	N	3140	4.781	1.594	45	N	.3410	.0023	.340	39.0	78.5	1.750	1.438	(j)	4.781	1.344	45	N	.3410	.0023	.340	39.0	78.5	1.750	1.438
Oldsmobile	S, 88, 98	Y	N	1.500	(k)	4.975	1.750	45	N	.3421	.0032	.403	90.0	162.0	1.829	1.429	(l)	4.999	1.438	45	N	.3034	.0036	.403	90.0	162.0	1.829	1.429
Packard	S, 5040, 5560, 5580	Y	N	1.500	SCS	5.712	1.937	30	N	.3725	.0015	.374	82.0	165.0	1.750	1.375	AS	5.690	1.687	45	N	.3715	.0025	.374	82.0	165.0	1.750	1.375
Plymouth	6, P-25	N	N	N	SCS	4.840	1.530	45	N	.3400	.0020	.365	42.0	115.0	1.750	1.380	CNS	4.840	1.410	45	ACI	.3400	.0048	.465	42.0	115.0	1.750	1.380
	8, P-27	V	N	1.500	SCS	4.280	1.720	45	N	.3700	.0020	.360	53.0	140.0	1.690	1.310	CNS	4.200	1.410	45	N	.3700	.0030	.360	53.0	140.0	1.680	1.310
Pontiac	S, 50-27, 50-28	Y	N	1.500	3140	5.280	1.780	30	N	.3400	.0005	.370	56.0*	102.0*	1.530*	1.200*	SCS	5.230	1.500	45	N	.3400	.0005	.370	56.0*	102.0*	1.530*	1.200*
Studebaker	6, 1606	N	N	N	CNS	4.344	1.344	45	N	.3125	.0025	.344	51.5	98.0	1.056	1.313	2112	4.344	1.281	45	N	.3125	.0025	.344	51.5	98.0	1.656	1.313
	8, 1606, 6H	N	N	1.500	(m)	5.156	1.656	45	N	.3438	.0025	.350	50.0	110.0	2.031	1.672	2112N	5.156	1.631	45	N	.3438	.0025	.350	50.0	110.0	2.031	1.672
Willys	6, 6-226-A	N	E	N	SCS	5.187	1.520	60	N	.3406	.0029	.352	51.0	118.0	1.672	1.312	SCS	5.205	1.325	45	N	.3380	.0041	.332	51.0	118.0	1.672	1.312

ABBREVIATIONS

*—Outer spring only; inner spring, 24.0 at 1.330 on all models with valve closed and 56.0 at 1.172 on series 40 and 50.0 at 1.152 on series 50, 60 and 70 with valve open.

†—Outer spring only; inner spring 24.0 at 1.330 on all models with valve closed and 55.0 at 1.180 on series 40, 50 and 60 and 56.0 at 1.152 on series 70 with valve open.

▲—With Powerglide.

●—Outer spring only; inner spring 25.0 at 1.810 with valve closed and 57.0 at 1.430 with valve open.

♦—Outer spring only; inner spring 22.0 at 1.562 with valve closed and 42.0 at 1.187 with valve open.

‡—Outer spring only; inner spring 25.0 at 1.560 with valve closed and 42.0 at 1.190 with valve open.

•—Outer spring only; inner spring 26.0 at 1.480 with valve closed and 57.0 at 1.150 with valve open.

(a)—MS-201, 2155N or EMS-31.

(b)—Rich, 3140; Eaton, 8645.

(c)—Rich, 4.638; Eaton, 4.641.

(d)—Rich, head, N82120, stem, 8729; Eaton, 81940.

(e)—No with standard transmission; yes with Powerglide.

(f)—.336 with standard transmission; .324 with Powerglide.

(g)—.343 with standard transmission; .324 with Powerglide.

(h)—Head, 521; stem, 3140.

(i)—With single carburetor, none; with dual carburetors, 52100.

(j)—Head, 2112; stem, 3140.

(k)—3140 or 8645.

(l)—Thompson, XCR; Eaton, XCR head and 8645 stem.

(m)—Early models, silichrome steel; late models, 8645.

(n)—Head, 2112; stem, 8645.

ACI—Alloy cast iron. **AS**—Austenitic steel.
Be—Both. **CAS**—Cast austenitic steel.
CNMS—Chromium nickel molybdenum steel.
CNS—Chromium nickel steel.
CS—Chromium steel.
E—Exhaust.
MCNS—Manganese chromium nickel steel.
N—No or none.
NCS—Nickel chromium alloy steel.
SCS—Silicon chromium steel.
SNCS—Silicon or nickel chromium steel.
Y—Yes.

For Directory of Car Manufacturers listed above, see page 263

VALVE TIMING, LUBRICATION, AND EXHAUST SYSTEMS

PASSENGER CAR MAKE AND MODEL	VALVE TIMING: Operating Tappet Clearance — Intake	Operating Tappet Clearance — Exhaust	Tappet Clearance for Timing — Intake	Tappet Clearance for Timing — Exhaust	Timing Mark Location	TIMING: Intake — Opens (°B.T.C.)	Intake — Closes (°A.B.C.)	Exhaust — Opens (°B.B.C.)	Exhaust — Closes (°A.T.C.)	LUBRICATION SYSTEM: Lubrication—Type — Main Bearings	Connecting Rods	Piston Pins	Camshaft Bearings	Tappets	Timing Gear or Chain	Cylinder Walls	Oil Pump Type	Normal Oil Pressure Lbs at M.P.H.	Oil Pressure Gauge—Type	Type Oil Intake	Oil Filter Type	Capacity of Crankcase, Less Filter—qt	Range in Oil Grade Number (S.A.E. Nos.) Summer to Subzero	Oil—Type Recommended	EXHAUST SYSTEM: Muffler Type	Exhaust Pipe Diameter (In.)	Tail Pipe Diameter
Buick																											
S, 40	0	0	.004*	.004*	FDP	25.0	67.0	70.0	42.0	P	P	S	P	P	D	SN	G	35-1600	M	St	FF	6	20-5W	HD	DF	(a)	3
S, 50	0	0	.004*	.004*	HB	25.0	77.0	70.0	42.0	P	P	S	P	P	D	SN	G	35-1600	M	St	FF	6	20-5W	HD	DF	(a)	3½
S, 60	0	0	.004*	.004*	HB	25.0	77.0	70.0	42.0	P	P	S	P	P	D	SN	G	35-1600	M	St	FF	6	20-5W	HD	DF	(a)	3
S, 70	0	0	.004*	.004*	HB	28.0	79.0	75.0	42.0	P	P	S	P	P	D	SN	G	35-1600	M	St	FF	6	20-5W	HD	DF	(a)	2½
Cadillac																											
S, 60, 62, 75	0	0			VD	10.0	70.0	60.0	30.0	P	P	S	P	P	MCF	IJ	G	35-30†	R	F	PF	5	20-5W		RSR	2	1½
Chevrolet																											
S, 1500, 2100, 2400	.006H	.013H		0	Fly	(b)	38.0	42.0	9.0	P	P	Sp	P	MP	Noz	PJ	G	35-1200	R	F	PF	5	20-5W	HD	RF	2	1½
S, 1500, 2100, 2400*	0	0		0	Fly	10.5	53.5	49.0	15.0	P	P	Sp	P	MP	Noz	PJ	G	35-1200	R	F	PF	5	20-W	HD	RF	2	1½
S, 1500, 2100, 2400	.006H	.018H		0	VD	12.0	54.0	52.0	14.0	P	P	Sp	P	MP	P	PJ	G	35-1200	R	F	PF	4	20-5W	HD	RF	2	1½
S, 1500, 2100, 2400*	0	0		0	VD	10.0	54.0	52.0	20.0	P	P	Sp	P	MP	P	PJ	G	35-1200	R	F	PF	4	20-5W	HD	RF	2	1½
S, 2934	.010H	.020H		0	Fly	19.5	44.5	56.0	5.0	P	P	Sp	P	MP	PS	PJ	G	45-	M	St	N	5	20-5W	HD	ST	1¾	1½
Chrysler																											
S, C-67	0	0	VTS	VTS	VD	15.0	57.0	49.0	15.0	P	P	MS	P	MP	MF	MS	G	60-1500	M	F	FF	5	30-5W	NR	ST	(c)	2
S, C-68, C-69, C-70	0	0	VTS	VTS	VD	15.0	57.0	49.0	15.0	P	P	MS	P	MP	MF	MS	G	60-1500	M	F	FF	5	30-5W	NR	RF	2	1½
De Soto																											
S, S-21	0	0	VTS	VTS	VD	12.0	52.0	50.0	14.0	P	P	Mje	P	MP	MF	Mje	G	60-1500	M	F	Sh	5	30-5W	NR	RF	(e)	2
S, S-22	0	0	VTS	VTS	VD	(d)	76.0	54.0	10.0	P	P	Mje	P	MP	MF	Mje	G	60-1500	M	F	Sh	5	30-5W	NR	RF	(e)	2
Dodge S, D-55-1, D-55-2, D-55-3	0	0	VTS	VTS	CDP	14.0	50.0	52.0	12.0	P	P	Mje	P	MP	MF	Mje	G	60-1500	M	F	Sh	5	30-5W	NR	RF	(e)	2
S, D-56-1	.010H	.010H	.014	.014	VD	12.0	44.0	50.0	6.0	P	P	Mje	P	JS	MF	Mje	G	45-1500	M	F	Sp	5	30-5W	NR	RF	2	1½
Ford																											
6	.015H	.019H	ER	ER	VD	13.0	68.0	55.0	22.0	P	P	OM	P	GD	IP	Pa	G	50-2000	E	St	FF	5	20W-5W	RP	RF	2	1¾
8	.019H	.019H	ER	ER	VD	12.0	54.0	56.0	8.0	P	P	OM	P	GD	DD	Pa	G	50-2000	E	St	FF	5	20W-5W	RP	RF	2	1¾
S, 49A, 49B	.018H	.018H	(f)	(g)	VDP	12.0	54.0	56.0	8.0	P	P	OM	P	GD	DD	Pa	G	50-2000	E	St	FF	5	20W-5W	RP	RF	2	1¾
Hudson																											
S, 3S540	.010H	.012H	.010H	.012H	VD	26.8	98.7	64.8	46.7	P	P	Sp	P	Sp	P	Noz	G	40-30†	E	F	PF	5	30-5W		SR	2	1¾
S, 3S560	.012H	.012H	.010	.012	Fly	33.7	89.1	73.8	28.4	P	P	Sp	P	P	DS	DS	G	40-30†	E	F	PF	7	30-5W		SR	2½	2
S, 3S680	0	0	NU	NU	VD	14.0	58.0	52.0	16.0	P	P	Sp	P	P	DS	DS	G	50-2000	E	F	PF	8	30-5W		SR	2½	2
Lincoln																											
S, 73A, 73B	0	0	ER	ER	VD	8.0	58.0	52.0	12.0	P	P	OM	P	P	DD	Pa	G	50-2000	E	St	FF	5	20-5W	HD	RR	1¾	1¾
Mercury																											
S, Custom	.019H	.019H	ER	ER	VD	12.0	54.0	56.0	8.0	P	P	OM	P	GD	DD	Pa	G	50-2000	E	St	FF	5	20-5W	RP	RF	2	1¾
S, Monterey, Montclair	.019H	.019H	ER	ER	VD	12.0	54.0	56.0	8.0	P	P	OM	P	GD	DD	Pa	G	50-2000	E	St	FF	5	20-5W	RP	RF	2	1¾
Nash																											
S, 5540	.015H	.015H	.015	.015	VD	10.0	58.0	49.0	19.0	P	P	Sp	P	Sp	Sp	HR	G	50-30†	E	St	PF	4	20-5W		SR	1¾	1¾
S, 5560	.012H	.016H	.023	.023	VD	12.5	51.5	53.5	10.5	P	P	P	P	Sp	Sp	HR	G	60-3000	E	St	PF	6	20-5W		RF	1¾	1¾
S, 5580	0	0	NU	NU	VD	14.0	58.0	52.0	18.0	P	P	Sp	P	P	DS	DS	G	50-2800	E	F	PF	5	30-5W		SR	2¼	2
Nash-Hudson																											
4, 5A1, 5A2	.015C	.015C	.015	.015	Pul	5.0	45.0	40.0	10.0	P	P	Sp	P	Sp	Sp	HR	G	60-30†	E	St	PF	4	20-10W	Reg	RF	1½	1¼
S, 5510	.015H	.015H	.015	.015	VD	10.0	56.0	49.0	19.0	P	P	Sp	P	Sp	Sp	HR	G	60-30†	E	St	PF	4	20-5W		RF	1¾	1¼
Oldsmobile																											
S, 88, 98	0	0	ER	(b)	CB	13.5	50.5	49.5	14.5	P	P	Sp	P	P	P	P	G	40-50†	M	St	FF	5	20-5W	HD	RF	(i)	2
Packard																											
S, 5540	0	0	NU	NU	VD	14.0	58.0	52.0	18.0	P	P	OM	P	P	PJ	PJ	G	50-2800	E	F	PF	5	30-5W		RF	(j)	2
S, 5560	0	0	NU	NU	VD	14.0	58.0	52.0	18.0	P	P	OM	P	P	PJ	PJ	G	50-2800	E	F	PF	5	20-5W		RR	(j)	(k)
S, 5580	0	0	NU	NU	VD	14.0	58.0	52.0	18.0	P	P	OM	P	P	PJ	PJ	G	50-2800	E	F	PF	5	20-5W		RR	2	1¾
Plymouth																											
S, P-26	.010H	.010H	.014	.014	VD*	12.0	44.0	50.0	6.0	P	P	Mje	P	JS	MF	Mje	G	45-1500	M	F	Sp	5	30-5W	NR	RF	2	1½
S, P-27	0	0	VTS	VTS	CDP	14.0	50.0	52.0	9.0	P	P	Mje	P	MP	MF	Mje	G	60-1500	M	F	Sh	5	30-5W	NR	RF	(e)	2
Pontiac S, 55-27, 55-28	0	0	ER	ER	HBP	22.0	67.0	63.0	27.0	P	P	Sp	P	P	P	MJ	MJ	G	40-40†	M	F	FF	5	20-5W		RF	(l)	1¾
Studebaker																											
S, 16G6	.018C	.018C	.020	.020	VD	18.0	49.0	54.0	10.0	P	P	Sp	P	P	P	DJ	G	40-1500	M	F	PF	5	30-5W		RF	1¾	1¾
S, 16G8 (Early)	.024H	.024H	.030	.030	VD	10.0	48.0	50.0	6.0	P	P	Sp	P	P	P	DJ	G	40-1500	M	F	PF	6	30-5W		RF	(m)	2
S, 16G8 (Late), 6H	.024H	.024H	.030	.030	VD	11.0	54.0	51.0	14.0	P	P	Sp	P	P	P	DJ	G	40-1500	M	F	PF	6	30-5W		RF	(m)	2
Willys S, 6-229-A	.014C	.014C	.018	.020	VD	10.0	60.0	55.0	10.0	P	P	Sp	P	P	Noz	Noz	G	35-1700	E	F	PF	5	30-5W		RF	2	2

ABBREVIATIONS

*—Off seat.
†—Miles per hour.
▲—When equipped with Powerglide transmission.
■—Crankshaft drive pulley on P-26-1.
(a)—Branch, 2; main, 2¼.
(b)—1.0° after top center.
(c)—Branch, 1¾; main, 2¼.
(d)—4.0° after top center.
(e)—Branch, 1¾; main, 1¾.
(f)—Opens, .016; closes, .019.
(g)—Opens, .015; closes, .018.
(h)—Opens, .005; closes, .008.
(i)—Branch, 2; main, 2¼.
(j)—Branch, 2; main, 2¼ with single exhaust, 2 with dual exhaust.
(k)—2 with single exhaust; 1¾ with dual exhaust.
(l)—Branch, 1¾; main, 2.
(m)—Branch, 1¾; main, 2.
Bp—By-pass.
C—Cold.
CB—Crankshaft balancer.
CDP—Crankshaft drive pulley.
D—Drip from front crankshaft bearing.
DD—Directed drain back.
DF—Dynamic flow.
DJ—Directed jet.
DS—Directed spray.
E—Electric toll tale.
ER—End of ramps used for timing.
F—Floating.
FDP—Fan drive pulley.
FF—Full flow.
Fly—Flywheel.
G—Gear.
GD—Gravity from drain back.
H—Hot.
HB—Harmonic balancer.
HBP—Harmonic balancer pulley.
HD—Heavy duty.
HR—Squirt holes in rod.
IJ—Intermittent jet.
IP—Indexed pressure.
JS—Jet spray.
M—Mechanical.
MCF—Metered centrifugal flow.
MF—Metered flow.
MJ—Metered jet.
Mje—Metered jet spray.
MP—Metered pressure.
MS—Metered spray.
Noz—Nozzle.
NR—No recommendation.
NU—Not used.
OM—Oil mist.
P—Pressure.
PF—Positive flow.
PF—Partial flow.
PJ—Pressure jet.
Pa—Pressure stream.
PS—Pressure spray.
Pul—Pulley.
Reg—Regular.
RF—Reverse flow.
RP—Regular or premium.
RR—Reverse flow and resonator.
RSR—Reverse flow with straight through resonators.
S—Splash.
Sh—Shunt.
SN—Splash and nozzle.
Sp—Sprayed from connecting rod journal hole.
SR—Straight through with separate resonator.
St—Stationary.
ST—Straight through.
VD—Vibration damper.
VDP—Vibration damper pulley.
VTS—Valve train solid.

For Directory of Car Manufacturers listed above, see page 263

FUEL AND COOLING SYSTEMS

PASSENGER CAR MAKE AND MODEL	FUEL SYSTEM														COOLING SYSTEMS																	
			Fuel Pump			Carburetor						Air Cleaner Type			Radiator Cap Relief Valve Pressure (lb.)	Thermostat		By-pass Recirculation—Type	Radiator Core Type	Capacity		Full Length Water Jackets	Water All Around Cylinder	Radiator Hose							
	Fuel Tank Capacity (Gal.)	Recommended Fuel with Standard Head	Location	Pressure Range (lb.)	Vacuum Booster	Make	Model Number	Number Used	Type	Manifold Heat Control	Automatic Choke—Type	Standard	Optional		Type	Starts to Open at (Deg.)			With Heater (qt.)	Without Heater (qt.)			Lower		Upper		By-Pass	
																									Number and Type	Inside Diameter and Length	Number and Type	Inside Diameter and Length	Number and Type	Inside Diameter and Length
Buick																														
8, 40	19	Reg	RFE	5	Std	SC	(a)	1	DD	A	Int	OB	N		7	BP	190½	In	Cel	(c)	(d)	N	Y	1 Mo	1½	1 Mo	1½	N	.....
8, 60, 90	19	Pre	RFE	5	Std	CR	(b)	1	DF	A	Int	OB	N		7	BP	190½	In	Cel	(c)	(d)	N	Y	1 Mo	1½	1 Mo	1½	N	.....
8, 70	19	Pre	RFE	5	Std	CR	(b)	1	DF	A	Int	OB	N		7	BP	190½	In	Cel	20.3	18.1	Y	Y	1 Mo	1½	1 Mo	1½	N	.....
Cadillac 8, 60, 62	20	Pre	RFE	4-5½	Std	CR	(c)	(f)	DF	A	Int	OB	N		13½	Ch	165½	In	TC	22.8	18.1	Y	Y	1 Mo	1½-8½	1 Mo	1½-8½	N	.....
8, 75	20	Pre	RFE	4-5½	Std	CR	(c)	1	DF	A	Int	OB	N		13½	Ch	165½	In	TC	22.8	18.1	Y	Y	1 Mo	1½-8½	1 Mo	1½-8½	N	.....
Chevrolet 6, 1900, 2100, 2400	16		RFE	3½-4½	N	Roc	(g)	1	DS	A	Int	OW	OB		7	Ch	160	In	Cel	17.0	16.0	Y	Y	1 Mo	1½-16½	1 Mo	1½-16½	N	.....
8, 1900, 2100, 2400	16		RFE	4-5½	N	Roc	(h)	1	DD*	A	Int	OW	OB		7	Ch	160	In	Cel	17.0	16.0	Y	Y	1 Mo	1½-12	1 Mo	1½-11	N	.....
6, 2534	17¼	Pre	RFE	3½-4½	Std	Car	3706969	3	SS	N	M	Sc	N		4	Ch	151	In	Cel	18.3	17.8	Y	Y	2 Mo	1½-6½	1 MB	(i)	N	.....
Chrysler 8, C-67	20	Reg	RFE	5-6½	N	BB	6BD-2180S	1	DD	A	Int	OB	N		7†	Ch	162½	In	Cel*	25.0*	24.0*	Y	Y	1 Mo	1	1 Mo	1	N	.....
8, C-68, C-69, C-70	20	Pre	RFE	5-6½	N	Car	WCFB-2126S	1	DF	A	Int	OB	N		7†	Ch	162½	In	FT	26.0	25.0	Y	Y	1 Mo	1	1 Mo	1	1 Mo	1½
De Soto 8, S-21	20	Reg	RFE	5-6½	N	Car	WCFB-2210S	1	DF	A	Int	OB	N		7†	BP	162½	Ex	FT	24.0	23.0	Y	Y	1 Mo	1	1 Mo	1	1 Mo	1½
8, S-22	20	Reg	RFE	5-6½	N	BB	6BD-21175	1	DD	A	Int	OB	N		7†	BP	162½	Ex	Cel*	24.0	23.0	Y	Y	1 Mo	1	1 Mo	1	N	.....
Dodge 6, D-53-1, D-55-2	17	Reg	RFE	5-6½	N	Str	(j)	1	DD*	A	Int	OB	N		7†	Ch	162½	In	Cel	20.0	19.0	Y	Y	1 Mo	1	1 Mo	1	N	.....
8, D-55-3	17	Reg	RFE	5-6½	N	Str	(k)	1	DD*	A	Int	OB	N		7†	Ch	162½	In	Cel	20.0	19.0	Y	Y	1 Mo	1	1 Mo	1	N	.....
8, D-56-1	17	Reg	RFE	4-6½	N	Str	WW3-124	1	DD	A	Int	OB	N		7	Ch	162½	In	Cel	14.0	12.0	Y	N	1 Mo	1½	1 Mo	1½-6½	N	.....
Ford 6	17½	Reg	RCE	4-5	Opt	F-H		1	DS	A	M	D	OB		13	Ch	158½	In	FT	20.0	19.0	Y	Y	1 Mo	1½-17½	1 Mo	1½-17½	1 St	½-3½
8	17½	Reg	LFE	4-5	Opt	F-H		1	DD*	A	M♣	D‡	OB		13	Ch	158½	Ex	FT	20.0	19.0	Y	Y	1 Mo	2-10½	1 Mo	1½-12½	1 St	½-4½
8, 49A, 49B	17½	Reg	LFE	4-5	Std			1	DF	A	Int	OB	N		13	Ch	158½	Ex	FT	21.0	20.0	Y	Y	1 Mo	2-13½	1 Mo	1½-16½		
Hudson 6, 26B40	20	Reg	RRE	4-5	(l)	Car	(u)	(n)	DS	A	Int	D	N		7	Ch	152½	N	FT	14.0	13.0	Y	N	1 Mo	1½	1 Mo	1½	N	.....
6, 26B60	20	Reg	RSE	4-5	(l)	Car	(v)	(n)	(o)	A	Int	D	N		7	Ch	170	N	FT	19.5	18.5	Y	Y	2-St	1½-4	1 Mo	1½-12½	N	.....
8, 26B80	20	Reg	FE	3½-5½	Std	Car	WDG-2231-S	1	DD	A	Int	OB	N		7	Ch	170	N	FT	21.0	20.0	Y	Y	1 Mo	1½-8½	1 Mo	1½-14½	N	.....
Lincoln 8, 73A, 73B	20	Pre	LFE	3½-4½	Std			1	DF	A	Int	OB	N		13½	Ch	160½	Ex	Cel	25.2	23.0	Y	Y	1 Mo	2-11½	1 Mo	1½-10½	1 Mo	1½-13½
Mercury 8, Custom, Monterey	18	Reg	LFE	4-5	Std			1	DF	A	Int	OB	N		13½	Ch	158½	Ex	FT	20.0	19.0	Y	Y	1 Mo	2-11½	1 Mo	1½-11½	1 St	½-3½
8, Montclair	18	Pre	LFE	4-5	Std			1	DF	A	Int	OB	N		13½	Ch	158½	Ex	FT	20.0	19.0	Y	Y	1 Mo	2-11½	1 Mo	1½-11½	1 St	½-3½
Nash 6, 5040	20	Reg	RSE	4-5½	(l)	Car	(m)	(n)	(o)	N	Int	D	OB		7	Ch	170	N	FT	15.0	14.0	Y	N	1 Mo	1½-21½	1 Mo	1½-12½	N	.....
8, 5060	20	Reg	RSE	4-5½	(l)	Car	(p)	(n)	$$	N	Int	D	OB		7	Ch	170	N	FT	18.0	17.0	Y	Y	1 Mo	1½-21½	1 Mo	1½-10½	N	.....
8, 5080	20	Pre	RSE	3½-5½	Std	Car	2231-S	1	DD	A	Int	OB	N		7	Ch	170	N	FT	21.0	20.0	Y	Y	1 Mo	1½-9½	1 Mo	1½-14½	1 St	½-2½
Nash-Hudson 4, 541, 542	10½	Reg	OC	1½-2½	N	Zen	30-VIG-10	1	DS	N	M	OB	N		4	BP	162½	Ex	FT	8.0		Y	N	1 Mo	1½	1 Mo	1½	N	.....
6, 5510	20	Reg	RSE	4-5½	(l)	Car	YF-2014-S	1	DS	N	Int	D	OB		7	Ch	170	N	FT	12.0	11.0	Y	N	1 Mo	1½	1 Mo	1½	N	.....
Oldsmobile 8, 98	20	Pre	EFC	4-5	Std	Roc	2GC	1	DD	A	Int	D	OB		7	Ch	160½	In	Cel	21.5	20.5	Y	Y	1 Mo	1½-15½	1 Mo	1½-11½	N	.....
8, Super 88, 98	20	Pre	EFC	4-5	Std	Roc	4GC	1	DF	A	Int	D	OB		7	Ch	160½	In	Cel	21.5	20.5	Y	Y	1 Mo	1½-15½	1 Mo	1½-11½	N	.....
Packard 8, 5040	20	Pre	RFE	3½-5½	Std	Car	WCFB-2232-S	1	DF	A	Int	OB	N		12	Ch	170	N	FT	26.5	25.0	Y	Y	1 Mo	1½-13½	1 Mo	1½-12½	N	.....
8, 5560	20	Pre	RFE	3½-5½	Std	Roc	4GC	1	DF	A	Int	OB	N		12	Ch	170	N	FT	26.5	25.0	Y	Y	1 Mo	1½-13½	1 Mo	1½-12½	N	.....
8, 5580	20	Pre	RFE	3½-5½	Std	Roc	4GC	1*	DF	A	Int	OB	N		12	Ch	170	N	FT	27.0	26.0	Y	Y	2-St	(q)	1 Mo	1½-12½	N	.....
Plymouth 6, P-26	17	Reg	RFE	4-5½	N	BB	2963SA	1	DS	A	Int	OB	N		7†	Ch	162½	In	Cel	20.0	19.0	Y	Y	1 Mo	1½	1 Mo	1½	N	.....
6, P-27	17	Reg	RFE	5-6½	N			1	DD	A	Int	OB	N		7†	BP	162½	In	Cel	20.0	19.0	Y	Y	1 Mo	1½	1 Mo	1½	N	.....
Pontiac 8, 55-27, 55-28	20	Pre	LFE	4-5	Std	CR	(f)	1	DD	A	Int	OM	OB		7	BP	151	In	Cel	26.0	24.0	Y	Y	1 Mo	2-10½	1 Mo	1½-12½	2 St	1½-3½
Studebaker 6, 19G6	18	Reg	RFE	4-5½	N	Car	WE-2108-S	1	DS	A	Int	PP	OB		13	Ch	159½	In	Cel	11.5	10.0	Y	N	1 Mo	1½	1 Mo	1½	N	.....
8, 19G8	18	Reg	LFE	4-5½	N	Str	(a)	1	DD	A	Int	PP	OB		13	Ch	159½	In	Cel	16.8	17.3	Y	Y	1 Mo	1½	1 Mo	1½	N	.....
8, 5H	18	Reg	LFE	4-5½	N	Car	(t)	1	DF	A	Int	OB	N		13	Ch	159½	In	Cel	16.8	17.3	Y	Y	1 Mo	1½	1 Mo	1½	N	.....
Willys 6, 6-226-A	19		RSE	3½-5½	Std	Car	WGD-2082-SA	1	DD	N	Int	OB	N		7	Ch	165	In	Cel	14.0	13.0	Y	Y	1 Mo	1½	1 Mo	1½	N	.....

ABBREVIATIONS

*—Four barrel carburetor and dual exhaust optional.
†—14 when equipped with air conditioning.
*—Same as C-68, C-69, C-70 or S-21 when equipped with air conditioning.
♣—Automatic, with four barrel carburetor.
‡—Oil bath, with four barrel carburetor.
♦—Two used on Caribbean.
(a)—Stromberg, AAVB-267; Carter, WCD.
(b)—Carter, WCFB; Rochester, 4G.
(c)—18.0 with standard transmission; 22.0 with Dynaflow.
(d)—16.5 with standard transmission; 18.5 with Dynaflow.
(e)—Carter WCFB-2185-S and 2266-S standard, WCFB-2186-S and 2267-S with air conditioning; Rochester 7007970 standard, 7007971 with air conditioning; Eldorado, Rochester, front, 7007240, rear, 7007241 standard, 7007240, front, 7007942, rear with air conditioning.
(f)—Eldorado, 2.
(g)—7007181 with standard transmission; 7007180 with Powerglide.
(h)—7008005 with standard transmission; 7008004 with Powerglide.
(i)—Molded, 1¼ x 12; straight, 1¼ x 10¼.
(j)—WW3-131 standard; WCFB-2253-S optional.
(k)—WW3-120 standard; WCFB-2253-S optional.
(l)—Standard with overdrive and Hydra-matic; none with standard transmission.
(m)—Single carburetor, WCD-2061S; dual carburetors, YF-2258-S.
(n)—Single carburetor, one; dual carburetors, two.
(o)—Single carburetor, dual downdraft; dual carburetors, single downdraft.
(p)—Single carburetor, YH-895-S; dual carburetors, front, YH-973-S, rear, YH-974-S.
(q)—1¾ x 3 and 1⅝ x 5¼.
(r)—Carter, WGD-2207S; Rochester, 7006100.
(s)—Early models, WW; late models with standard transmission, WW-6-115, with automatic transmission, WW-6-116.
(t)—WCFB-2219-S with standard transmission; State, WCFB-2214-S, De Luxe, WCFB-2330-S with automatic transmission.
(u)—Single carburetor, WAI-2009-SA; dual carburetors, WAI-2012-S.
(v)—Single carburetor, WDG-2252-S; dual carburetors, WAI-2012-S.

A—Automatic.
BB—Ball and Ball (Carter).
BP—By-pass.
Car—Carter Carburetor Co.
Cel—Cellular.
Ch—Choke.
CR—Carter or Rochester.
D—Dry.
DD—Downdraft dual.
DF—Downdraft four barrel.
DS—Downdraft single throat.
EFC—Engine front cover.
Ex—External.
FE—Front of engine block.
F-H—Ford or Holley.
FT—Fin and tube.
In—Internal.
Int—Integral.
LFE—Left front of engine.
M—Manual.
Mo—Molded.
MS—Molded and straight.
N—No or none.
OB—Oil bath.
OC—On crankcase.
OM—Oiled crimped metal.
Opt—Optional.
OW—Oil wetted.
PP—Plasticized paper, water repellent and resistant.
Pre—Premium.
RCE—Right center of engine block.
Reg—Regular.
RFE—Right front of engine block.
Roc—Rochester Products Div.
RRE—Right rear of engine block.
RSE—Right side of engine block.
Sc—Screen.
SC—Stromberg or Carter.
SS—Side draft, single throat.
St—Straight.
Std—Standard.
Str—Stromberg Carburetor Div.
TC—Tube and center.
Y—Yes.
Zen—Zenith, Ltd.

For Directory of Car Manufacturers listed above, see page 263

DRIVE BELTS, AND ELECTRICAL SUPPLY SYSTEM

PASSENGER CAR MAKE AND MODEL	DRIVE BELTS: Fan: Number Used	Fan: Angle of V (deg.)	Fan: Outside Length (in.)	Fan: Width (in.)	Generator: Angle of V (deg.)	Generator: Outside Length (deg.)	Generator: Width (in.)	BATTERY: Make	Model	S.A.E. Designation	Location	Terminal Grounded	ELECTRICAL SUPPLY SYSTEM: Generator: Make	Generator: Model	Generator: Type	Generator: Ratio—Gen to Cr'ks rev. (To—1)	Regulator: Make	Regulator: Model	Regulator: Type	Regulator: Cut-out Relay: Closing Voltage at Generator R.P.M.	Regulator: Cut-out Relay: Reverse Current to Open (amp.)	Regulator: Regulated: Voltage	Regulator: Regulated: Current	Minimum Generator R.P.M. Required	Voltage Test Conditions: Temperature (deg.)	Voltage Test Conditions: Load	Voltage Test Conditions: Other
Buick 8, 40, 50, 60, 70	1	36	52.7	5/8	*			DR	3KM60-W	N	UHL	Neg	DR	1102066	Sh	2.17	DR	1118826	CV	11.6-13.6	1-6	14.0-15.0	27-33	2300H	100F	1-10 amp	N
Cadillac 8, 60, 62, 75	1	48	57.0	5/8	*			DR	3EM60-W	N	UHR	Neg	DR	1102062		2.18	DR	1118826	CV	11.6-13.6	0-4	14.0-15.0	27-33	2150	OT	0-10 amp	FR
Chevrolet 6, 1800, 2100, 2400	1	40½	49.8	5/8	*			DR	2SM50-W	N	UHR	Neg	DR	1100310	SW	2.31	DR	1118945	CV	12.8-1170		14.5	25	2750	OT	10 amp	
6, 1800, 2100, 2400	1	40½	54.2	5/8	*			DR	2SM50-W	N	UHR	Neg	DR	1100310	SW	2.31	DR	1118945	CV	12.8-1170		14.5	25	2750	OT	10 amp	
6, 2934	1	40½	49.0	5/8	*			DR	1SAA6-W	1M	UHR	Neg	DR	1102703	SW	2.06	DR	1118725	CV	6.4-1160		7.4	45	2580H	OT	0-10 amp	
Chrysler 8, C-67	2†	36	39.0	5/8	36	43.5	5/8	A-W	(a)	2H	UHL	Pos	AL	GGW-6001	SW	2.10	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000H	70F	10 amp	
8, C-68	2†	36	39.0	5/8	36	43.5	5/8	A-W	(b)	2H	UHL	Pos	AL	GGW-6001	SW	2.10	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000H	70F	10 amp	
8, C-69	4*	36	39.0	5/8	36	43.5	5/8	A-W	(b)	2H	UHL	Pos	AL	GGU-6013	SW	2.10	AL	VAV-6001B	CV	6.3-6.8-1000	4-5	7.1-7.4	50-62	900H	70F	10 amp	
8, C-70	4*	36	39.0	5/8	36	43.5	5/8	AL	12H-6S-R	N	UHL	Pos	AL	GHM-6003	SW	2.10	AL	VRX-6003A	CV	13.0-13.75 960	0-9	14.2-14.8	25-38	800H	70F	10 amp	
De Soto 8, S-21	2*	36	39.0	5/8	36	41.0	5/8	A-W	(c)	2H	UHL	Pos	AL	GGW-6001	SW	2.02	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000	70F	10 amp	
8, S-22	2*	36	37.2	5/8	36	41.0	5/8	A-W	(c)	2H	UHL	Pos	AL	GGW-6001	SW	2.02	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000	70F	10 amp	
Dodge 6, D-56-1, D-56-2	1‡	36	53.8	5/8	*			A-W	(d)	1H	UHL	Pos	AL	GGW-6012	SW	1.96	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000	70F	10 amp	
6, D-56-3	2*	36	36.0	5/8	36	38.0	5/8	A-W	(d)	1H	UHL	Pos	AL	GGW-6001	SW	1.96	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000	70F	10 amp	
6, D-56-1	1	36	40.0	5/8	*			A-W	(d)	(e)	UHL	Pos	AL	GGW-6001	SW	1.96	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000	70F	10 amp	
Ford 6	1‡	36	39.0*	5/8	*			Var			UHR	Pos	Fo	FAA-10000A	SW	2.00	F-A	(h)	TC	6.0-6.6	0-8	7.4-7.8	34-36	1850	75F	10 amp	3000*
8	1‡	36	44.7	5/8	*			Var			UHR	Pos	Fo	FAT-10000A	SW	2.00	F-A	(h)	TC	6.0-6.6	0-8	7.4-7.8	34-36	1850	75F	10 amp	3000*
8, 40A, 40S	1‡	36	44.7	5/8	*			Fo	FDA-10005A		UHL	Pos	Fo	FBA-10000C	SW	2.00	Fo	(i)	CV	6.0-6.6	4-6	7.4-7.8	38-42	1900	60F	10 amp	3000*
Hudson 6, 3S340	1	36	38.8	5/8	*			AL	1H-80R	1H	UH	Pos	AL	GGW-4002-A	SW	1.77	AL	VBE-6104A	CV	6.7-920	NS	7.4	45	1940	70F		
6, 3S560	1	47	41.4	5/8	*			AL	1H-105D	1H	UH	Pos	AL	GGW-4001-B	SW	1.91	AL	VBE-6104A	CV	6.7-920	NS	7.3	45	1940	70F		
8, 3S660	1	36	46.7	5/8	*			AL	1H-105D	1H	UH	Pos	AL	4001-E	SW	2.35	AL	VBE-6101A	CV	6.5-1000	4-5	7.3	45-57	2050	OT	0-10 amp	
Lincoln 8, 73A, 73S	2	36	46.2*	5/8	*			AL			UHR	Pos	Fo	FBB-10000H	SW	2.00	Fo	FAJ-10005A	TC	6.0-6.6	0-8	7.4-7.8	48-52	1850	75F	10 amp	
Mercury 8	1‡	36	44.7*	5/8	*			Var			UHR	Pos	Fo	FBA-10000E	SW	2.00	F-A	(i)	TC	6.0-6.6	0-8	7.4-7.8	38-42	1750	75F	10 amp	
Nash 6, 3S40	1	36	41.5	5/8	*			AL	1H-80R	1H	UH	Pos	DR	1102777	SW	1.92	DR	1118828	CV	6.4-1225	4-6	7.3	47	2450	OT	0-10 amp	
6, 3S60	1	36	40.1	5/8	*			AL	1H-105D	1H	UH	Pos	DR	1102777	SW	1.92	DR	1118828	CV	6.4-1225	4-6	7.3	47	2450	OT	0-10 amp	
8, 3S60	1	36	36.7	5/8	*			AL	1H-105D	1H	UH	Pos	AL	4001-E	SW	2.35	AL	VBE-6101A	CV	6.5-1000	4-5	7.3	45-57	2050	OT	0-10 amp	
Nash-Hudson 4, 541, 542	1	32	34.9	5/8	*			Luc	GTW5A	N	USR	Pos	Luc	C39-PV-2	SW	1.31	Luc	RB106-1	TCo	12.7-13.3-1125	3-5	15.8-16.4		1000	20C	OC	
6, 3S10	1	36	40.1	5/8	*			AL	1M-100	1M	UH	Pos	DR	1100021	SW	1.92	DR	1118841	CV	6.2-1050	4-6	7.3	38	625	OT	0-10 amp	
Oldsmobile 8, 88, 98	1	36	57.5	5/8	*			DR	3KM60-W	N	UHL	Neg	DR	1102003	SW	2.24	DR	1118826	CV	12.8	0-4	14.5	30	3200	80F	1-10 amp	
Packard 8, 5540	1	36	56.7	5/8	*			A-W		N	UHL	Pos	AL	GJC-6001A	SW	2.25	AL	VRX-6007A	CV	13.0-13.6	½-4	14.3-14.8	30	2300	70F	10 amp	
8, 5560, 5580	1	36	56.7	5/8	*			A-W		N	UHL	Pos	DR	1102022	SW	2.25	DR	1118953	CV	11.8-13.5	0-4	13.8-14.8	30	2300	70F	FR	
Plymouth 6, P-26	1	36	49.0	5/8	*			A-W	(f)	(g)	UHL	Pos	AL	GGW-6001	SW	1.82	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000H	70F	10 amp	
8, P-27	1‖	36	60.8	5/8	*			A-W	(f)	1M	UHL	Pos	AL	GGW-6001	SW	1.96	AL	VBE-6001A	CV	6.3-6.8-1000	4-5	7.1-7.4	45-57	1000H	70F	10 amp	
Pontiac 8, 29-27, 55-28	1	36	50.2	5/8	*			DR	2SM60-W	N	UHL	Neg	DR	1100304	SW	2.47	DR	1118945	CV	11.9-13.6	NS	14.3	26	2650	OT	IIL	FR
Studebaker 6, 16Q6	1	36	46.3	5/8	*			Wil	HDW-1-100		UHL	Pos	AL	GGW-4001E	SW	1.84	AL	VBE-6101A	CV	6.3-6.8	1	7.2-7.5	44-46	2040	70F	10 amp	3500*
8, 16Q8, 8H	1	36	57.0	5/8	*			Wil	HDW-1-100		UHL	Pos	DR	1102773	SW	2.09	DR	1118950	CV	6.1-7.0	1	6.9-8.3	44-46	2400	75F	10 amp	3500*
Willys 6, 6-226-A	1	36	41.0	1/2	*			A-W		1M	UHR	Neg	AL	GGW-4001EN	SW	1.75	AL	VBE-6105A	Vib	6.3-6.8-1000	4-5	7.2-7.4	45H	2450H	70F	22 amp	

ABBREVIATIONS

*—Same belt is used to drive both fan and generator.
†—Three used with air conditioning; four with power steering.
*—Three used with air conditioning.
‖—Two used with power steering; three with air conditioning.
‡—Two used with power steering.
■—36.5 with power steering.
•—38.5 with power steering.
▼—Revolutions per minute.
(a)—Auto-Lite, 2H-120-D; Willard, HW-2-120-C.
(b)—Auto-Lite, 2H-135-RD; Willard, MW-2-135-R.
(c)—Auto-Lite, 2H-120-B; Willard, HW-2-120-C.
(d)—Auto-Lite, 1H-105-D; Willard, HW-1-105-C; D-56-1 model with Powerflite uses Auto-Lite, 2H-120-D.
(e)—1H with standard transmission; 2H with Powerflite.
(f)—Auto-Lite, 1M-100-D; Willard, HW-100-C; P-26 with Powerflite uses Auto-Lite, 2H-120-D.
(g) 1M with standard transmission; 2H with Powerflite.
(h)—FAC-10505-A1 or FAC-10505-A2.
(i)—FAD-10505-A or FAD-10505-C.
amp—Amperes.
AL—Electric Auto-Lite Co.
A-W—Auto-Lite or Willard.
C—Degrees centigrade.
CV—Current and voltage control.
DR—Delco-Remy Div.
F—Degrees fahrenheit.
F-A—Ford or American Bosch.
Fe—Ford Motor Co.
FR—Fixed resistance method.
H—Hot.
IIL—Ignition and instrument load.
Luc—Lucas.
N—No or none.
Neg—Negative.
NS—Not specified.
OC—Open circuit.
OT—Operating temperature.
Pos—Positive.
Sh—Shunt.
SW—Shunt wound.
TC—Three coil.
TCo—Temperature compensated.
UH—Under hood.
UHL—Under hood on left side.
UHR—Under hood on right side.
USR—Under rear seat on right side.
Var—Various.
Vib—Vibrator.
Wil—Willard.

For Directory of Car Manufacturers listed above, see page 263

STARTING AND IGNITION SYSTEMS

PASSENGER CAR MAKE AND MODEL	STARTING SYSTEM: MOTOR: Make	Model	Engine Cranking Speed (RPM)	Test Conditions	Lock Test: Amps	Lock Test: Volts	Lock Test: Torque (ft. lb.)	No Load Test: Amps	No Load Test: Volts	No Load Test: RPM (min.)	CONTROL: Switch	CONTROL: Starting Procedure	DRIVE: Engagement—Type	DRIVE: Pinion Meshes	DRIVE: Number Teeth: Pinion	DRIVE: Number Teeth: Flywheel	DRIVE: Flywheel Tooth Face Width	IGNITION SYSTEM: COIL: Make	COIL: Model	COIL: Amps.: Engine Stopped	COIL: Amps.: Engine Idling	DISTRIBUTOR: Make	DISTRIBUTOR: Model	DISTRIBUTOR: Spark Advance Data (at distributor shaft): Centrifugal Advance (Averages): Start (RPM)	DISTRIBUTOR: Spark Advance Data (at distributor shaft): Centrifugal Advance (Averages): Maximum Degrees (at RPM)	DISTRIBUTOR: Spark Advance Data (at distributor shaft): Vacuum Advance Start (in Hg.)	DISTRIBUTOR: Spark Advance Data (at distributor shaft): Vacuum Advance (max. deg. @ in. Hg.)	DISTRIBUTOR: Breaker Gap (in.)	DISTRIBUTOR: Cam Angle (deg.)	DISTRIBUTOR: Breaker Arm Tension (oz.)
Buick	DR	1107621	180	ED	470	5.10	12.0	65	10.20	4000	Sol	Dsp	OC	F	9	160	.573	DR	1115081*	4.50	2.50	DR	1110949	3°-300	12.3°-1750	0°-7.50	10.5°-12.0	.018†	NR	21
Cadillac	DR	1107626	80	NA	460	5.20	11.0	75	10.30	6500	Sol	Tik	SOC	F	9	176	.500	DR	1115082*	3.00	1.25	DR	1110952	0°-450	11.6°-2000	0°-7.50	13.6°-16.5	.019	31	21
Chevrolet 6, 1900, 2100, 2400	DR	1107626	NA	ED	415	5.80	12.0	65	10.40	7900	Sol	Tik	Sol	F	9	168	.485	DR	1115085	4.00	1.75	DR	1112403	0°-300	13.0°-1750	0°-5.00	7.5°-9.0	.019	30	21
6, 1500, 2100, 2400	DR	1107626	NA	EO	415	5.80	12.0	65	10.40	7900	Sol	Tik	Sol	F	9	168	.485	DR	1115083	4.00	1.75	DR	1110947	0°-300	16.0°-1800	0°-6.00	13.5°-15.0	.019	30	21
6, 2934	DR	1107106	125	EO	525	3.40	11.0	65	5.00	5000	Sol	Tik	OC	F	9	120	.500	DR	1115394	5.40	3.00	DR	1112314	0°-300	13.0°-1750	0°-5.00	15.0°-6.9	.016	44	21
Chrysler 8, C-67, C-68, C-69	AL	MCL-6121A	75	EO	410	2.00	8.0	65	5.00	4300	Sol	Tik	SgO	F	9	146	.380	AL	CR-6015	5.00	2.50	AL	IAZ-4001E	0°-375	14.0°-2050	1.0°-6.00	11.5°-17.0	.017	34	19
6, C-70	AL	MDB-6001A	75	EO	140	4.00	4.0	21	10.00	4000	Sol	Tik	SgO	F	9	146	.380	AL	CZ-4001	3.00	2.20	AL	IAZ-4001E	0°-375	14.0°-2050	1.0°-6.00	11.5°-17.0	.017	34	19
De Soto 8, S-21	AL	MCH-6113A	75	EO	410	2.00	8.0	65	5.00	4300	Sol	Tik	SC	F	9	146	.375	AL	CR-6015	5.00	2.25	AL	IAZ-4002D	0°-350	12.0°-1800	1.0°-6.00	11.5°-17.0	.017	27	19
8, S-22	AL	MCH-6113A	75	EO	410	2.00	8.0	65	5.00	4300	Sol	Tik	SC	F	9	146	.375	AL	CR-6015	5.00	2.25	AL	IAZ-4002C	0°-350	8.0°-800	1.0°-6.00	7.0°-11.0	.017	27	19
Dodge 8, D-55-1, D-55-2	AL	MCH-6206	75	EO	500	3.00	11.0	57	5.50	4900	.....	Tik	Ben	F	9	146	.375	AL	CR-6015	5.00	2.25	AL	IAZ-4003Q	0°-350	16.0°-1650	1.0°-6.00	4.0°-6.5	.017	27	19
8, D-55-3	AL	MCH-6206	75	EO	500	3.00	11.0	57	5.50	4900	.....	Tik	Ben	F	9	146	.375	AL	CR-6015	5.00	2.25	AL	IAZ-4003F	0°-350	12.0°-1625	1.0°-6.00	7.0°-11.0	.017	27	19
6, D-56-1	AL	MCH-6206	75	EO	500	3.00	11.0	57	5.50	4900	.....	Tik	Ben	F	9	146	.375	AL	CR-4001	5.00	2.25	AL	IAT-4101B	0°-400	8.0°-1350	1.0°-6.00	8.0°-14.0	.020	38	19
Ford 6	Fo	FAC-11001J	125	RT	700	3.50	16.0	70	6.00	4000	Sol	Tik	Ben	R	9	148	.375	Fo	8BA-12029	5.00	3.00	Hol	FDH12127A	None	None	1.0°-.3	14.5°-7.2	.025	27	19
8	Fo	FAC-11001J	120	RT	700	3.50	16.0	70	6.00	4000	Sol	Tik	Ben	R	9	148	.375	Fo	8BA-12029	5.00	3.00	F-H	(a)	None	None	2.0°-.3	16.5°-4.6	.015	27	19
8, 40A, 406	Fo	FAC-11001H	120	RT	700	3.50	14.3	70	6.00	5000	Sol	Tik	Ben	R	9	148	.....	Fo	8BA-12029	5.00	3.00	Hol	FEC12127A	None	None	.5°-2.00	16.5°-32.4	.015	27	19
Hudson 6, 3854G	AL	(t)	120	.....	280	2.80	4.4	70	5.50	4300	Sol	Tik	Ben	R	9	128	.406	AL	CR-6012A	4.80	2.50	AL	IAT-4016	0°-300	14.5°-1500	0°-5.00	7.5°-9.0	.020	38	19
6, 3856G	AL	(u)	120	.....	335	2.80	6.0	65	5.50	4900	Sol	Tik	Ben	R	9	134	.406	AL	CR-6012A	4.50	2.50	AL	IAT-4009-A	0°-500	9.0°-2000	0°-13.00	4.0°-12.0	.020	38	19
8, 3856G	AL	MCL-6132	NA	.....	410	2.80	8.0	70	5.65	5500	Sol	Tik	Sol	F	9	162	.375	AL	CR-4001	5.00	2.30	AL	IBJEU13401	0°-600	20.0°-1200	0°-6.00	11.0°-10.0	.017	36	19
Lincoln 8, 73A, 736	Fo	FAC-11001H	120	RT	700	3.80	14.0	70	6.00	5500	Sol	Pbd	Ben	R	9	162	.375	Fo	8BA-12029	5.00	3.00	Hol	FDL12127B	None	None	5.0°-.2	25.0°-2.4	.015	27	19
Mercury 8	Fo	FAC-11001H	120	RT	700	3.80	14.0	70	6.00	5500	Sol	Tik	Ben	R	9	146	.375	Fo	8BA-12029	5.00	3.00	Hol	FEC12127A	None	None	1.0°-.2	16.5°-2.0	.015	27	19
Nash 6, 5840	DR	(a)	NA	.....	550	3.25	11.0	70	5.65	5500	(b)	(c)	Ben	R	9	122	.438	DR	1115378	5.00	2.30	DR	(d)	(e)	(f)	0°-4.00	(g)	.022	34	19
6, 5860	DR	(h)	NA	.....	570	3.15	14.0	70	5.65	5500	(b)	(c)	Ben	R	9	132	.438	DR	1115379	5.00	2.30	DR	1110227	0°-300	15.0°-1350	0°-4.00	7.5°-14.0	.022	34	19
8, 5880	AL	MCL-6132	NA	.....	410	2.80	8.0	70	5.65	5500	Sol	Lsl	Sol	F	9	162	.375	AL	CR-4001	5.00	2.30	AL	IBJEU13401	0°-600	20.0°-1200	0°-6.00	11.0°-10.0	.017	36	19
Nash-Hudson 4, 541, 542	Luc	M38G-1	325	RT	390	7.50	9.3	45	12.00	5500	Man	Pubd	Ben	R	9	117	.375	Luc	Q12	2.70	.90	Luc	DM2	0°-600	7.0°-1700	0°-6.00	12.0°-16.0	.015	30	22
6, 5810	DR	(i)	NA	.....	550	3.25	12.0	70	5.65	5500	(b)	(c)	Ben	R	9	122	.438	DR	1115393	5.00	2.30	DR	1112382	2°-600	24.0°-2800	0°-4.00	7.5°-16.0	.022	34	19
Oldsmobile 8, 88, 98	DR	1107623	180	EO	460	5.20	11.0	95	10.10	3900	Sol	Tik	SgO	F	9	176	.500	DR	1115082	4.80	2.80	DR	1110950	0°-650	28.0°-3450	0°-5.50	21.5°-16.0	.016	35	21
Packard 8, 5840	AL	MDD-6301	40	NA	395	6.10	14.0	75	11.00	4400	Sol	Tik	Ben	F	9	162	.375	AL	CAD-6001	.....	.....	AL	(j)	0°-350	(k)	0°-6.00	(l)	.016	27	21
8, 5860, 5880	DR	1107635	40	NA	470	5.40	11.0	95	10.10	3900	Sol	Tik	Sol	F	9	162	.375	DR	1115084	.....	.....	DR	1110954	0°-300	16.0°-2150	0°-6.00	10.0°-12.5	.016	30	21
Plymouth 6, P-25	AL	MCH-6206	75	EO	500	3.00	11.0	60	5.50	4900	Sol	Tik	Ben	F	9	146	.375	AL	CR-4001	5.00	2.25	AL	IAT-4101B	0°-400	8.0°-1350	1.0°-6.00	8.0°-14.0	.020	38	19
6, P-27	AL	MCH-6206	75	EO	500	3.00	11.0	60	5.50	4900	Sol	Tik	Ben	F	9	146	.375	AL	CR-6015	5.00	2.25	AL	(m)	0°-350	(n)	1.0°-6.00	(o)	.018	27	19
Pontiac 8, 58-27, 58-28	DR	1107631*	140	RT	440	5.40	12.8	85	10.20	4200	Sol	Tik	SgO	F	9	176	(p)	DR	1115084	3.80	1.20	DR	1110628	0°-500	30.0°-3400	0°-5.00	16.0°-16.0	.016	30	21
Studebaker 6, 1606	AL	MZ-4157	100	EO	390	3.80	10.4	70	5.50	4300	Sol	Tik	Ben	F	9	124	.375	AL	CR-6007	5.80	2.00	AL	IAT-4201	0°-600	18.0°-2900	0°-4.00	20.0°-12.0	.020	38	19
8, 1608, 6H	DR	(q)	100	EO	525	3.40	12.0	65	5.70	5000	Sol	Tik	Ben	F	9	133	.375	DR	1115282	4.50	2.00	DR	1110839	0°-650	24.0°-2900	0°-5.00	10.0°-11.5	.013	31	19
Willys 6, 6-226-A	AL	(r)	185	RT	335	2.00	6.0	65	5.00	4300	Sol	Tik	Ben	F	9	150	.500	AL	CR-6008	5.00	2.50	AL	IAT-4306	0°-325	9.0°-1675	0°-10.00	5.0°-18.0	.020	39	19

ABBREVIATIONS

*—To be used in series with resistance unit 1927808.
†—Dwell meter for setting point opening is not recommended.
*—1107632 with power steering.
(a)—1107119 with standard transmission; 1107126 with Hydramatic.
(b)—Manual with standard transmission; solenoid with Hydramatic.
(c)—Depress clutch pedal with standard transmission; place shift level in neutral and lift with Hydramatic.
(d)—1112383 standard; 1110241 optional.
(e)—0°-325 standard; 0°-300 optional.
(f)—12.0°-1400 standard; 15.0°-1550 optional.
(g)—8.5°-11.5 standard; 7.0°-14.0 optional.
(h)—1107950 with standard transmission; 1109028 with Hydramatic.
(i)—1107119 with standard transmission; 1107121 with Hydramatic.
(j)—IBJ-4001 or IBJ-4001-A.
(k)—30.0°-1300 with IBJ-4001; 16.0°-1750 with IBJ-4001-A.
(l)—8.50°-10.0 with IBJ-4001; 12.0°-13.0 with IBJ-4001-A.
(m)—IAZ-4003-E or IAZ-4003-G.
(n)—18.0°-1900 with IAZ-4003-E; 16.0°-1650 with IAZ-4003-G.
(o)—7.0°-11.0 with IAZ-4003-E; 4.0°-8.5 with IAZ-4003-G.
(p)—.300 with standard transmission; .360 with Hydramatic.
(q)—1107115 with standard transmission; 1107116 with Hydramatic.
(r)—MCH-6210 with standard transmission; MCH-6211 with Hydramatic.
(s)—FDJ-12127-C1 or FDJ-12127-C2.
(t)—MZ-4167 with standard transmission; MZ-4172 with Hydramatic.
(u)—MCH-6109 with standard transmission; MCH-3606 Hydramatic.

AL—Electric Auto-Lite Co.
Ben—Bendix.
Dsp—Depress accelerator pedal.
DR—Delco-Remy Div.
EO—Engine at operating temperature.
F—Front. F-H—Ford or Holley.
Fo—Ford Motor Co.
Hol—Holley Carburetor Co.
Lsl—Place shift lever in neutral and lift.
Luc—Lucas.
Man—Manual. NA—Not available.
NR—Not recommended.
OC—Overrunning clutch.
Pbd—Push button on dash.
Pubd—Pull button on dash.
R—Rear. RT—Room temperature.
SC—Solenoid, clutch.
SgO—Sliding gear, overrunning clutch.
SOC—Spiral spline, overrunning clutch.
Sol—Solenoid.
Tik—Turn ignition key beyond "on" position.

For Directory of Car Manufacturers listed above, see page 263

IGNITION TIMING, SPARK PLUGS, AND CLUTCHES

PASSENGER CAR MAKE AND MODEL	IGNITION TIMING		SPARK PLUGS				CABLE				CLUTCH (PEDAL OPERATED)																					
																		Facing							Release Bearing		Torsional Dampening	
	Cs deg. @ RPM	Mark Location	Make and Model	Thread (mm)	Tightening Torque (ft. lb.)	Gap	Conductor Type	Insulation Type	Spark Plug Protector	Suppression Type	Make	Type	Fluid Coupling	Semi-centrifugal	Type Pressure Plate Springs	Total Plate Pressure	No. of Driven Discs	Material	Inside Diam. (in.)	Outside Diam. (in.)	Effective Area (Sq. in.)	Thickness (in.)	Number Required	Engagement Cushioning Method	Type	Method of Lubrication	Method	Friction Material
Buick																																
8, 40	6BTC	FDP	AC-44-S	14	25	.033	SC	No	NMC	Dis,Co,Gen,VR	Bui	DP	N	N	CrS	1350	1	Wov	6.0	10.0	100.6	.125	2	Spr	B	S	Spr	Wov
8, 50, 60	6BTC	HB	AC-44-S	14	25	.033	SC	No	NMC	Dis,Co,Gen,VR	Bui	DP	N	N	CoS	1680	1	Wov	6.5	10.5	100.6	.125	2	Spr	B	S	Spr	Wov
8, 70	6BTC	HB	AC-44-S	14	25	.033	SC	No	NMC	Dis,Co,Gen,VR	N																					
Cadillac 8, 60, 62, 75	2½BTC	CS	AC-44-S*	14	23	.035		No	No	Dis,Co,Gen,VR	N																					
Chevrolet 6, 1900, 2100, 2400	TC	Fly	AC-44-S	14	23	.036	LC	RN	P	HTC	C-S	DP	N	N	Dia	1380	1	MA	6.0	9.5	85.2	.135	2	Spr	B	S	Spr	.....
8, 1900, 2100, 2400	4BTC	VD	AC-44-S	14	23	.036	LC	RN	P	HTC	C-S	DP	N	N	Dia	1380	1	MA	6.0	10.0	100.5	.135	2	Spr	B	S	Spr	.....
6, 2934	2ATC	Fly	AC-44-S	14	23	.036	LC	RN	No	Gen,VR,Dis,Co,HTC	N																					
Chrysler 8, C-67	6BTC	VD	AL-4S165	14	31	.035	SC	RN	ETC	SP,Dis	BB	DP	N	N	CoS	1962	1	WMA	6.0	10.0	100.5	.125	2	Spr	B	S	CoS	.....
8, C-68, C-69, C-70	6BTC	VD	AL-4GS175	14	31	.035	SC	RN	ETC	SP,Dis	N																					
De Soto 8, S-21	4BTC	VD	AL-4S165	14	31	.035	SC	RN	No	SP,Dis	BB	DP	N	N	CoS	1684	1	WMA	6.0	10.0	100.5	.125	2	Spr	B	S	CoS	.....
8, S-22	10BTC	VD	AL-4S140	14	31	.035	SC	RN	No	SP,Dis	BB	DP	N	N	CoS	1639	1	WMA	6.0	10.0	100.5	.125	2	Spr	B	S	CoS	.....
Dodge 8, D-55-1, D-56-2, D-56-3	4BTC	FDP	AL-4S165	14	31	.035	SC	RN	RC	SP,Dis	BB	DP	N	N	CoS	1639	1	WMA	6.0	10.0	100.5	.125	2	Spr	B	S	CoS	.....
8, D-56-1	2BTC	VD	AL-4S140	14	31	.035	SC	RN	RC	SP,Dis	BA	DP	N	N	CoS	1389	1	WMA	6.0	9.3	77.6	(a)	2	Spr	B	S	CoS	.....
Ford 8	2BTC	VD	Ch-870	18	25	.034	SC	No	No	.....	Lo	DP	N	Y	CoS	1230	1	WA	6.0	9.5	85.2	.125	2	Spr	B	S	Spr	St
8	6BTC	VD	Ch-870	18	25	.034	SC	No	No	.....	Lo	DP	N	Y	CoS	1305	1	WA	6.5	10.0	85.5	.125	2	Spr	B	S	Spr	St
8, 40A, 49B	6BTC	CP	Ch-870	18	25	.034	SC	No	No	.....	Lo	DP	N	Y	CoS	1305	1	WA	7.0	11.1	113.1	.125	2	Spr	B	S	Spr	St
Hudson 6, 35540	TC	VD	Ch-H10	14	(b)	.032	SC	No	No	Dis	BB	DP	N	N	Co	1242	1	MA	6.1	9.1	71.9	.205	1	Spr	B	S	Spr	St
6, 35560	TC	Fly	Ch-H11	14	25	.030	SC	No	No	Dis	BB	DP	N	N	Co	1734	1	.....	6.5	10.3	88.7	.125	2	Spr	B	S	Spr	St
8, 35580	6BTC	VD	AL-AG5	14	30	.035	CT	No	Hy	Dis	N																					
Lincoln 8, 73A, 73B	6BTC	VD	Ch-870	18	25	.034	SC	No	No	.....	N																					
Mercury 8	(b)	VD	Ch-870	18	25	.034	SC	No	No	.....	BB	DP	N	N	CoS	1767	1	WA	6.5	10.3	90.6	.125	2	Spr	B	S	Spr	St
Nash 6, 5540	4ATC	VD	(c)	14	30	.030	Sc	No	No	HTC†	BB	DP	N	N	CoS	1215	1	.....	5.4	8.0	55.5	.125	2	Spr	B	S	Spr	St
6, 5560	4ATC	VD	AL-A7	14	30	.030	Sc	No	No	HTC†	BB	DP	N	N	CoS	1305	1	.....	7.0	10.0	80.1	.125	2	Spr	B	S	Spr	St
8, 5580	6BTC	VD	AL-AG5	14	30	.035	CT	No	Hy	Dis	N																					
Nash-Hudson 4, 541, 542	11BTC	CP	Ch-N6B	14	30	.024	SC	Ru	Ru	Gen	BB	DP	N	N	CoS	720	1	MA	5.0	7.3	43.3	.125	2	Spr	CR	N	Spr	St
6, 5516	4ATC	VD	AL-A7A	14	30	.030	SC	RN	N	HTC†	BB	DP	N	N	CoS	1215	1	.....	5.4	8.0	55.2	.125	2	Spr	B	S	Spr	St
Oldsmobile 6, 88, 98	8BTC	CP	AC-44-S	14	26	.030	.....	No	No	.....	Lo	DP	N	Y	Cpo	1400	1	WMA	7.0	11.0	56.5	.136	2	Spr	B	F	Spr	St
Packard 8, 5540	2BTC	VD	Ch-H10	14	28	.035	CT	No	Hy	Dis,Gen,VR,Co,GS	Lo	DP	N	Y	CoS	1467	1	WA	7.0	10.5	96.2	.125	2	TD	B	S	Spr	MA
8, 5560	6BTC	VD	AL-AG5	14	28	.035	CT	No	Hy	Dis,Gen,VR,Co,GS	Lo	DP	N	Y	CoS	1467	1	WA	7.0	11.0	133.1	.125	2	TD	B	S	Spr	MA
8, 5580	6BTC	VD	Ch-H10	14	28	.035	CT	No	Hy	Dis,Gen, VR,Co,GS	N																					
Plymouth 6, P-26	2BTC	VD	AL-4S140	14	31	.035	SC	RN	RC	SP,Dis	B-A	DP	N	N	CoS	(d)	1	WMA	6.0	9.3	77.9	(a)	2	Spr	B	S	CoS	.....
8, P-27	4BTC	VD	AL-4S165	14	31	.035	SC	RN	RC	SP,Dis	BB	DP	N	N	CoS	1639	1	WMA	(e)	10.0	(f)	.125	2	Spr	B	S	CoS	.....
Pontiac 8, 55-27, 56-28	6BTC	HBP	AC-44-S	14	28	.035	Car	No	BR	HTC,GS,Wh,Gen,VR	IL	DP	N	N	Dia	1613	1	WMA	6.8	10.0	85.0	.125	2	Spr	B	S	CoS	St
Studebaker 8, 16G6	2BTC	VD	Ch-J7	14	28	.031	.....	No	.....	Co,Gen,Dis,GS	BB	DP	N	N	CoS	1170	1	MA	6.1	9.1	72.0	.125	2	Spr	B	S	CoS	St
8, 16G8 (Early)	8BTC	VD	Ch-H11	14	28	.035	.....	No	.....	Co,Gen,Dis,GS	BB	DP	N	N	CoS	1325	1	MA	6.0	9.3	78.0	.125	2	Spr	B	S	CoS	St
8, 16G8 (Late), 6H	4BTC	VD	Ch-H11	14	28	.036	.....	No	.....	Co,Gen,Dis,GS	BB	DP	N	N	CoS	1500	1	MA	6.0	10.0	100.0	.125	2	Spr	B	S	CoS	St
Willys 6, 6-226-A	4BTC	VD	(g)	14	29	.030	SC	No	.....	Dis,Gen	B-A	DP	N	N	CoS	1470	1	MA	6.0	9.3	78.0	.125	2	Spr	B	S	CoS	St

ABBREVIATIONS

*—Eldorado uses AC-43-S.
†—With radio only.
(a)—Borg & Beck, .125; Auburn, .115.
(b)—3BTC with standard transmission and overdrive; 6BTC with Mercomatic.
(c)—Auto-Lite A7A with single carburetor; Auto-Lite 7J with dual carburetors.
(d)—Borg & Beck, 1389; Auburn, 1412.
(e)—6.0 or 6.8.
(f)—85.5 or 100.5.
(g)—Auto-Lite A7 or Champion J8.
(h)—28 with cast iron head; 25 with aluminum head.
AC—A.C. Spark Plug Div.
AL—Electric Auto-Lite Co.
ATC—After top center.
B—Ball bearing.
B-A—Borg & Beck or Auburn.
BB—Borg & Beck Div.
BR—Butyl rubber boot.
BTC—Before top center.
Bui—Buick Motor Div.
Car—Carbonized thread.
CB—Crankshaft balancer.
C-S—Chevrolet or Borg & Beck.
Ch—Champion Spark Plug Co.
Co—Coil. **CoS**—Coil springs.
CP—Crankshaft pulley.
CpS—Compression springs.
CR—Carbon ring. **CrS**—Crown spring.
CT—Copper wire, tinned.
Dia—Diaphragm. **Dis**—Distributor.
DP—Dry plate.
ETC—Enclosed tubes, covered.
F—Grease fitting.
FDP—Fandrive pulley. **Fly**—Flywheel.
Gen—Generator. **GS**—Ground strap.
HB—Harmonic balancer.
HBP—Harmonic balancer pulley.
HTC—High tension cables.
Hy—Hypalon.
IL—Inland with Long driven member.
LC—Linen core impregnated with an electrical conducting material.
Lo—Long Mfg. Div.
MA—Molded asbestos.
N—No or none. **Ne**—Neoprene.
NMC—Neoprene boot and sheet metal cover.
P—Plastic.
RC—Rubber cap integral with spark plug wire.
RN—Rubber with neoprene jacket.
Ru—Rubber.
S—Sealed.
Sc—Steel core wire.
SC—Stranded copper.
SP—Spark plugs.
Spr—Springs.
St—Steel
TC—Top center.
TD—Torbend disc.
VD—Vibration damper.
VR—Voltage regulator.
WA—Woven asbestos.
Wh—Wheels.
WMA—Woven molded asbestos.
Wov—Woven.
Y—Yes.

For Directory of Car Manufacturers listed above, see page 263

LAMP BULBS, FUSES AND CIRCUIT BREAKERS

PASSENGER CAR MAKE AND MODEL	LAMP BULBS (Trade Number)															FUSES AND CIRCUIT BREAKERS (Trade Number)												
	Headlamp	Headlamp Beam Indicator	Parking Light	Tail Light	Stop Light	Direction Indicator: Front	Direction Indicator: Rear	Direction Indicator: Tail	License Plate Light	Instrument Light	Ignition Lock Light	Dome Light	Clock Light	Courtesy Light	Trunk Compartment Light	Headlamp	Headlamp Beam Indicator	Parking Light	Tail Light	Stop Light	Direction Indicator	License Plate Light	Instrument Light	Ignition Light	Dome Light	Clock	Clock Light	Courtesy Light	Trunk Compartment Light
Buick 8, 40, 50, 60, 70	4400	53	1034	1034	(a)	(b)	(a)	53	67	57	N	1004	57	N	89	25CB	(c)	(c)	(c)	SFE9	(d)	(c)	(c)	N	SFE20	AGA2	(c)	N	(e)
Cadillac 8, 60, 62, 75	4400	57	1034	1034	(a)	(b)	(a)	57	67	57	53	1004	57	90	89	22CB	(c)	(c)	(c)	(c)	SFE9	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Chevrolet 6, 8, 1500, 2100, 2400	4400	53	67	1034	(a)	1034	(a)	53	67	57	53	1004	67	89	63	13CB	.....	(c)	13CB	(a)	(a)	(a)	(a)	(a)	.....	(a)	(a)	(a)
6, 2834	.....	51	1154	1154	(a)	(b)	(a)	51	63	55	51	N	55	82	N	30CB	(c)	(c)	(c)	SFE14	(c)	(c)	(c)	N	(c)	(c)	.....	.....	N
Chrysler 8, C-67, C-68	2422	55	63	63	1154	1129	1129	55	63	55	51	210	55	1130	67	25CB	(c)	(c)	10CB	10CB	N	(a)	(a)	(c)	(d)	SFE3	(a)	(d)	(d)
8, C-69	2422	55	1154	1154	(a)	(b)	(a)	55	63	55	51	210	55	55	67	25CB	(c)	(c)	10CB	10CB	N	(a)	(a)	(c)	(d)	SFE3	(a)	(d)	(d)
8, C-70	2425	57	1034	1034	(a)	(b)	(a)	57	67	57	53	1004	57	57	93	25CB	(c)	(c)	10CB	10CB	N	(a)	(a)	(c)	(d)	SFE3	(a)	(d)	(d)
De Soto 8, S-21, S-22	2422	55	1154	1154	(a)	(b)	(a)	55	63	55	51	210	55	1130	67	25CB	(c)	(c)	10CB	10CB	N	(a)	(a)	(c)	(d)	SFE3	(a)	(d)	(d)
Dodge 6, D-55-1, D-55-2; 6, D-56-1	2422	55	63	1154	(a)	1154	(a)	55	63	55	51	210	55	1130	67	25CB	(c)	(c)	10CB	10CB	N	(a)	(a)	(c)	(d)	SFE3	(a)	(d)	(d)
8, D-56-3	2422	55	1154	1154	(a)	(b)	(a)	55	63	55	51	210	55	1130	67	25CB	(c)	(c)	10CB	10CB	N	(a)	(a)	(c)	(d)	SFE3	(a)	(d)	(d)
Ford 6, 8	4030	51	1154	1154	(a)	(b)	(a)	51	63	55	55	209	55	63	61	20CB	(c)	20CB	(b)	(b)	SFE9	(b)	(b)	(b)	SFE9	SFE2,3	(b)	(c)	(b)
8, 40A, 486	4030	51	1154	1154	(a)	(b)	(a)	51	63	55	55	N	55	81	N	20CB	(c)	20CB	(b)	(b)	SFE9	(b)	(b)	(b)	N	(b)	(b)	SFE9	N
Hudson 6, 28540	4030	51	1154	1154	(a)	(b)	(d)	51	63	51	N	81	51	(c)	N	25CB	(c)	20CB	(b)	(b)	(b)	(b)	(b)	N	(b)	SFE3	(b)	N	N
6, 28560; 8, 28580	4030	51	1154	1154	(a)	(b)	(d)	51	63	51	N	81	(f)	(c)	N	25CB	(c)	20CB	(b)	(b)	(b)	(b)	(b)	N	(b)	SFE3	(b)	N	N
Lincoln 8, 73A	4030	51	1154	1154	(a)	(b)	(a)	51	63	55	(f)	209	(f)	63	63	20CB	(c)	20CB	(b)	(b)	SFE9	(b)	(b)	(b)	SFE9	N	(b)	(c)	(b)
8, 73C	4030	51	1154	1154	(a)	(b)	(a)	51	63	55	(f)	63	(f)	63	63	20CB	(c)	20CB	(b)	(b)	SFE9	(b)	(b)	(b)	SFE9	N	(b)	(c)	(b)
Mercury 8	4030	51	1154	1154	(a)	(b)	(a)	51	63	55	55	209	55	209	63	20CB	(c)	20CB	(b)	(b)	SFE9	(b)	(b)	(b)	SFE9	AGA2,3	(b)	(c)	(b)
Nash 6, 9540, 9560; 8, 9580	4030	51	1154	1154	(a)	(b)	(d)	51	63	51	N	81	51	(c)	N	20CB	(c)	(c)	(c)	20CB	(d)	(c)	(c)	(c)	(c)	N	(c)	N	N
Nash-Hudson 4, 541, 542	4430	1447	1016	1016	(a)	(b)	1141	432	67	1447	N	N	N	57	N	3AG30	(c)	(c)	(c)	3AG30	(d)	(c)	(c)	N	N	N	N	(c)	N
6, 9510	4030	51	1154	1154	(a)	(b)	(d)	51	63	55	N	81	55	N	N	AGC30	(c)	(c)	(c)	SFE30	(d)	(c)	(c)	N	(c)	N	(c)	N	N
Oldsmobile 8, 88	4400	53	1034	1034	(a)	(b)	(a)	57	67	57	57	1004	57	90	89	25CB	(c)	(c)	SFE9	AGC25	SFE9	(a)	AGA2	SFE9	AGC25	AGA1	AGA2	AGC25	SFE9
8, 98	4400	53	1034	1034	(a)	(b)	(a)	57	67	57	57	90	57	90	89	25CB	(c)	(c)	SFE9	AGC25	SFE9	(a)	AGA2	SFE9	AGC25	AGA1	AGA2	AGC25	SFE9
Packard 8, 5040, 5090, 5060	4400	57	1034	1034	(a)	57	57	57	67	57	53	1004	57	1004	89	22CB	(c)	(c)	(c)	SFE20	SFE9	(c)	(c)	(c)	(d)	AGA2	(c)	(e)	(c)
Plymouth 6, P-28; 8, P-27	2422	55	63	1154	(a)	1154	(a)	55	63	55	51	210	55	1130	67	25CB	(c)	(c)	10CB	10CB	N	(a)	(a)	(c)	(d)	SFE3	(a)	(ad)	(d)
Pontiac 8, 25-27, 25-28	.....	53	67	1034	(a)	1034	(a)	57	67	57	57	1004*	57	89	93	22CB	(c)	(c)	F	F	F	(a)	SFE4	(f)	(d)	F	(f)	(d)	(d)
Studebaker 6, 1906; 8, 1908, 814	4030	51	63	1154	(a)	1158	(a)	51	63	51	N	86	51	88	63	30CB	(c)	(c)	(c)	20CB	SFE14	(c)	(c)	N	(d)	SFE3	(c)	(d)	(c)
Willys 6, 6-226-A	.....	51	63	1154	(a)	1158	(d)	51	63	55	N	87†	55	81	N	30CB	(c)	(c)	(c)	(c)	SFE14	(c)	(c)	N	(c)	(c)	(c)	(c)	N

ABBREVIATIONS
*—Custom Catalina, 90.
†—Hardtop, 61.
(a)—Same as tail light.
(b)—Same as parking light.
(c)—Same as headlamp.
(d)—Same as stop light.
(e)—Same as dome light.
(f)—Same as instrument light.
CB—Circuit breaker.
F—Fuse.
N—No or none.

For Directory of Car Manufacturers listed above, see page 263

TRANSMISSIONS—Conventional and Conventional with Overdrive

PASSENGER CAR MAKE AND MODEL	TYPE			CONVENTIONAL TRANSMISSION														OVERDRIVE												
					Ratios									Lubricant											Lubricant					
	Conventional	Conventional with O.D.	Automatic	No. of Forward Speeds	First	Second	Third	Reverse	Constant Mesh Gears in 2nd	Spur Gear Used In	Helical Gears Used In	Synchromesh Meshing in 2nd and 3rd Gears	Capacity (pt.)	Type Recommended	SAE Viscosity Number: Summer	Winter	Extreme Cold	Type	No. of Planetary Pinions	Manual Lockout	Downshift Accelerator Control	Minimum Cut-in Speed (mph)	Gear Ratio (to 1)	Capacity (pt.)	Separate Filter	Type Recommended	SAE Viscosity Number: Summer	Winter	Extreme Cold
Buick																														
6, 40	Std	NA	Opt	3	2.67	1.68	1.00	3.02	Y	N	AS	Y	1¾	MP	80	80	80	NA												
8, 50, 60	Std	NA	Opt	3	2.39	1.53	1.00	2.53	Y	N	AS	Y	2½	MP	80	80	80	NA												
8, 70	NA	NA	Std	NA														NA												
Cadillac																														
8, 60, 62, 75	NA	NA	Std	NA														NA												
Chevrolet																														
6, 8, 1500, 2100, 2400	Std	Opt	Opt	3	2.94	1.68	1.00	2.94	Y	N	AS	Y	2	MO	90	80	80	P	3	Y	Y	31	.700	1	.....	MO	90	80	80
6, 2934	NA	NA	Std	NA														NA												
Chrysler																														
8, C-67	Std	NA	Opt	3	2.67	1.63	1.00	3.48	Y	N	AS	Y	2¼	EO	10W	10W	10W	NA												
8, C-68, C-69, C-70	NA	NA	Std	NA														NA												
De Soto																														
8, S-21, S-22	Std	Opt	Opt	3	2.67	1.63	1.00	3.48	Y	N	AS	Y	2¼	EO	10W	10W	10W	P	3	Y	Y	28	.700	¾	N	EO	10W	10W	10W
Dodge																														
8, D-55-1, D-55-2, D-55-3	Std	Opt	Opt	3	2.67	1.63	1.00	3.48	Y	N	AS	Y	2¼	EO	10W	10W	10W	P	3	Y	Y	26	.700	¾	N	EO	10W	10W	10W
6, D-56-1	Std	Opt	Opt	3	2.67	1.63	1.00	3.48	Y	N	AS	Y	2¼	EO	10W	10W	10W	P	4	Y	Y	25	.700	¾	N	EO	10W	10W	10W
Ford																														
6	Std	Opt	Opt	3	2.78	1.62	1.00	3.36	Y	N	AS	Y	3	EP	80	80	80	P	3	Y	Y	27	.700	1½	N	EP	80	80	80
8	Std	Opt	Opt	3	2.67	1.63	1.00	3.13	Y	N	AS	Y	3	EP	80	80	80	P	3	Y	Y	27	.700	1½	N	EP	80	80	80
8, 40A, 60S	Std	Opt	Opt	3	2.32	1.48	1.00	2.82	Y	N	AS	Y	3	MP	80	80	75	P	3	Y	Y	28	.700	1½	N	MP	80	80	75
Hudson																														
6, 3-240	Std	Opt	Opt	3	2.61	1.63	1.00	3.54	Y	N	1,2,R	Y	2¼	MO	90	80	.....	P	3	Y	Y	25	.700	1¼	N	MO	90	80	.....
6, 3S560	Std	Opt	Opt	3	2.57	1.55	1.00	3.48	Y	N	1,2,R	Y	2¼	MO	90	80	.....	P	3	Y	Y	25	.700	1¼	N	MO	90	80	.....
6, 3S560	NA	NA	Std	NA														NA												
Lincoln																														
8, 73A, 73B	NA	NA	Std	NA														NA												
Mercury																														
8	Std	Opt	Opt	3	2.49	1.59	1.00	3.15	Y	N	AS	Y	3½	EP	80	80	80	P	4	Y	Y	28	.720	1½	N	EP	80	80	80
Nash																														
6, 6S40	Std	Opt	Opt	3	2.61	1.63	1.00	3.54	Y	N	1,2,R	Y	2¼	MO	90	80	.....	P	3	Y	Y	25	.700	1¼	N	MO	90	80	.....
6, 5S60	Std	Opt	Opt	3	2.57	1.55	1.00	3.48	Y	N	1,2,R	Y	2¼	MO	90	80	.....	P	3	Y	Y	25	.700	1¼	N	MO	90	80	.....
6, 5S60	NA	NA	Std	NA														NA												
Nash-Hudson																														
6, 541, 542	Std	NA	NA	3	2.94	1.49	1.00	3.39	Y	R	1,2	Y	5½	MO	40	30	20	NA												
6, 5S10	Std	Opt	Opt	3	2.61	1.63	1.00	3.54	Y	N	AS	Y	1½	MO	90	80	.....	P	3	Y	Y	25	.700	1¼	N	MO	90	80	.....
Oldsmobile																														
8, 88, 98	Std	NA	Opt	3	2.39	1.53	1.00	2.53	Y	N	AS	Y	2½	EP	80	80	80	NA												
Packard																														
8, 5540, 5560	Std	Opt	Opt	3	2.49	1.59	1.00	3.15	Y	N	1,2,R	Y	3½*	EP	90	90	80	P	4	Y	Y	22	.722	1¼	Y	EP	90	80	80
8, 5580	NA	NA	Std	NA																										
Plymouth																														
6, P-26	Std	Opt	Opt	3	2.57	1.83	1.00	3.48	Y	N	AS	Y	2¼	GL	80	80	80	P	3	Y	Y	25	.700	¾	N	GL	80	80	80
8, P-27	Std	Opt	Opt	3	2.57	1.83	1.00	3.48	Y	N	AS	Y	2¼	GL	80	80	80	P	3	Y	Y	28	.700	¾	N	GL	80	80	80
Pontiac																														
8, 55-27, 55-28	Std	NA	Opt	3	2.39	1.49	1.00	2.71	Y	N	AS	Y	1¼	EP	80-90	80-90	80-90	NA												
Studebaker																														
6, 16G6	Std	Opt	Opt	3	2.61	1.63	1.00	3.54	Y	N	AS	Y	1½	MO	90	90	90	P	3	Y	Y	25	.700	1⅛	N	MO	90	90	90
8, 16G8, 8H	Std	Opt	Opt	3	2.57	1.55	1.00	3.48	Y	N	AS	Y	2½	MO	90	90	90	P	3	Y	Y	25	.700	1	N	MO	90	90	90
Willys																														
6, 9-226-A	Std	Opt	Opt	3	2.67	1.56	1.00	3.49	Y	N	AS	Y	2½	GL	90	80	80	P	3	Y	Y	24	.700	1	Y	GL	90	90	80

ABBREVIATIONS

*—2¼ with overdrive.

AS—All speeds.
EO—Engine oil.
EP—Mild extreme pressure.
GL—Gear lubricant.
MO—Mineral gear oil.
MP—"Multi-Purpose" gear lubricant.
N—No or none.
NA—Not available.
Opt—Optional.
P—Planetary.
R—Reverse.
Std—Standard.
Y—Yes.

For Directory of Car Manufacturers listed above, see page 263

AUTOMATIC TRANSMISSIONS

PASSENGER CARS MAKE AND MODEL	TRADE NAME	Type	Manual Selector Positions (left to right)	GEAR RATIOS: 1st or Low Range	2nd or Drive Range	3rd or Intermediate Range	4th Speed	Reverse	Shifting Within Drive Range by Accelerator and Governor	Governor-Forced Shift	Downshift Up to (mph)	TORQUE CONVERTER: Number of Elements	Max. Ratio at Stall at Engine RPM	Mechanical Lockup: Provided	Speed Range (mph)	Release at (mph)	Type of Cooling	Anti-Creep Device	LUBRICATION: Capacity—Refill (qt.)	Type Recommended	Grade (S A E. No.): Summer	Winter	Extreme Cold
Buick	Dynaflow	TCG	P,N,D,L,R	1.82*	1.90*	No	No	1.82*	Y	No	48	4	(a)	No			WC	No	10	†	†	†	†
S, 50, 60, 70	Dynaflow	TCG	P,N,D,L,R	1.82*	1.90*	No	No	1.82*	Y	No	48	4	(b)	No			WC	No	10	†	†	†	†
Cadillac S, 60, 62, 75	Hydramatic	FCG	N,Dr,Dr2,Lo,R	4.09	2.63	1.55	1.00	4.30	Y	Y	(c)	No							11	†	†	†	†
Chevrolet S, 8, 1500, 2100, 2400	Powerglide	TCG	P,N,D,L,R	1.82*	1.82*	1.00*	No	1.82*	Y	Y	50	3	2.10	No			WC	No	11	†	†	†	†
S, 2934	Powerglide	TCG	P,N,D,L,R	1.82*	1.82*	1.00*	No	1.82*	Y	Y	48	3	2.10	No			No	No	4	†	†	†	†
Chrysler S, C-67	Powerflite	TCG	R,N,D,L	1.72*	1.72*	1.00*	No	2.39*	No	Y	55	3	2.60	No			AC	No	10	†	†	†	†
S, C-68, C-69, C-70	Powerflite	TCG	R,N,D,L	1.72*	1.72*	1.00*	No	2.39*	No	Y	55	3	2.60	No			WC	No	11	†	†	†	†
De Soto S, S-21, S-22	Powerflite	TCG	R,N,D,L	1.72*	1.72*	1.00*	No	2.39*	No	Y	55	3	2.60	No			AC	No	11	†	†	†	†
Dodge S, D-55-1, D-56-2, D-56-3; S, D-56-1	Powerflite	TCG	R,N,D,L	1.72*	1.72*	1.00*	No	2.39*	No	Y	55	3	2.60	No			AC	No	10	†	†	†	†
Ford 8	Fordomatic	TCG	P,R,N,DR,LD	2.40*	1.47*	1.00*	No	2.00*	Y	Y	62	3	2.10-1480	No			AC	No	8¼	†	†	†	†
8	Fordomatic	TCG	P,R,N,DR,LO	2.40*	1.47*	1.00*	No	2.00*	Y	Y	64	3	2.10-1580	No			AC	No	9½	†	†	†	†
S, 40A, 409	Fordomatic	TCG	P,R,N,DR,LO	2.40*	1.47*	1.00*	No	2.00*	Y	Y	65	3	2.10-1650	No			AC	No	10¼	†	†	†	†
Hudson S, 35540	Hydramatic	FCG	N,D2,D1,L,R	3.82	2.63	1.45	1.00	4.30	Y	Y	58	No							8½	†	†	†	†
S, 35560	Hydramatic	FCG	N,D2,D1,L,R	3.82	2.63	1.45	1.00	4.30	Y	Y	58	No							11	†	†	†	†
S, 35660	Ultramatic	TCG	P,N,D2,D1,L,R	1.82*	1.82	1.00*	No	1.63*	Y	No	55	4	2.90-1650	Y	50-55	15	WC	No	11	†	†	†	†
Lincoln S, 73A, 73B	Turbo Drive	TCG	P,R,N,DR,LO	2.40*	1.47*	1.00*	No	2.00*	Y	Y	71	3	2.10-1625	No			AC	No	10	†	†	†	†
Mercury 8	Merc-o-matic	TCG	P,R,N,DR,LO	2.40*	1.47*	1.00*	No	2.00*	Y	Y	69	3	2.10-1650	No			AC	No	10¼	†	†	†	†
Nash S, 5540	Hydramatic	FCG	N,Dr1,Dr2,Lo,R	3.82	2.63	1.45	1.00	4.30	Y	Y	58	No							8½	†	†	†	†
S, 5560	Hydramatic	FCG	N,Dr1,Dr2,Lo,R	3.82	2.63	1.45	1.00	4.30	Y	N	58	No							11	†	†	†	†
S, 5660	Ultramatic	TCG	P,N,D2,D1,L,R	1.82*	1.82*	1.00*	No	1.63*	Y	No	55	4	2.90-1650	Y	50-55	15	WC	No	11	†	†	†	†
Nash-Hudson 4, 541, 542	Not Available																						
S, 5510	Hydramatic	FCG	N,Dr1,Dr2,Lo,R	3.82	2.63	1.45	1.00	4.30	Y	Y	58	No							8½	†	†	†	†
Oldsmobile S, 88, 98	Hydramatic	FCG	N,Dr,S,Lo,R	3.82	2.63	1.45	1.00	4.30	Y	Y	65	No							10	†	†	†	†
Packard S, 5540, 5560, 5580	Ultramatic	TCG	P,N,D2,D1,L,R	1.82*	1.82*	1.00*	No	1.63*	Y	No	55	4	2.90-1650	Y	50-55	15	WC	No	11	†	†	†	†
Plymouth S, P-36; S, P-37	Powerflite	TCG	R,N,D,L	1.72*	1.72*	1.00*	No	2.39*	No	Y	55	3	2.60	No			AC	No	10	†	†	†	†
Pontiac S, 25-27, 25-28	Hydramatic	FCG	N,Dr1,Dr2,Lo,R	4.19	2.63	1.55	1.00	4.82	Y	Y	60	No							9½	†	†	†	†
Studebaker S, 1606	Automatic Drive	TCG	P,N,D,L,R	2.31*	2.31*	1.43*	1.00	2.00*	Y	Y	60	3	2.15-1600	Y	21*	18	AC	Y	9½	†	†	†	†
S, 1608 (Early)	Automatic Drive	TCG	P,N,D,L,R	2.31*	1.43*	1.00*	No	2.00*	Y	Y	60	3	2.15-1650	Y	18*	15	AC	Y	9½	†	†	†	†
S, 1608 (Late), 6H	Automatic Drive	TCG	P,N,D,L,R	2.31*	2.31*	1.43*	1.00	2.00*	Y	Y	62	3	2.15-1650	Y	21*	18	AC	Y	9½	†	†	†	†
Willys S, 6-226-A	Hydramatic	FCG	N,Dr1,Dr2,Lo,R	3.82	2.63	1.45	1.00	4.30	Y	Y	55	No							11	†	†	†	†

ABBREVIATIONS

*—Plus torque converter ratio.
†—Automatic transmission fluid type "A".

*—And up.
(a)—2.10-1300 with stator at low angle; 2.30-2500 with stator at high angle.
(b)—2.10-1500 with stator at low angle; 2.50-2500 with stator at high angle.
(c)—Fourth to third, 70; third to second, 20.
AC—Air cooled.
D—Drive.
Dr—Drive.
DR—Drive.
FCG—Fluid coupling with gear.
L—Low.
Lo—Low.
LO—Low.
N—Neutral.
No—No or none.
P—Park.
R—Reverse.
S—Super performance.
TCG—Torque converter with gears.
WC—Water cooled.
Y—Yes.

For Directory of Car Manufacturers listed above, see page 263

PROPELLER SHAFT, AND REAR AXLE

PASSENGER CAR MAKE AND MODEL	PROPELLER SHAFT										REAR AXLE															
			Intermediate Bearing		Universals								Gearing									Lubricant				
								Bearing					Ratios			No. of Teeth—Ring and Pinion								SAE Viscosity Number		
	Number Used	Type	Type	Lubrication	Make	Number Used	Type	Type	Lubrication	Drive Taken Through	Torque Taken Through	Type	Gear Type	Conventional (to 1)	Overdrive (to 1)	Automatic (to 1)	Conventional	Overdrive	Automatic	Pinion Adjustment	Pinion Bearing Adjustment	Capacity (Pt.)	Type Recommended	Summer	Winter	Extreme Cold
Buick																										
8, 40	1	TT	N		Sag, Spi	1	Cr	SB	LT	TT	TT	SF	Hy	3.90	N	3.40	43-11	N	43-12	Sh	N	4½	HG	80	90	80
8, 50, 60	1	TT	N		Sag, Spi	1	Cr	SB	LT	TT	TT	SF	Hy	3.90	N	3.40	43-11	N	41-12	Sh	N	4½	HG	80	90	80
8, 70	1	TT	N		Sag, Spi	1	Cr	SB	LT	TT	TT	SF	Hy	N	N	3.40	N	N	41-12	Sh	N	4½	HG	80	90	80
Cadillac																										
8, 60, 62	1	Ex	N		Mec, Sag	2	CT	No	P	RS	RS	SF	Hy	N	N	3.36[1]	N	N	37-11[1]	N	CS	5	HG	80	90	80
8, 75	2	Ex	AF	P	Mec	3	CT	No	P	RS	RS	SF	Hy	N	N	3.77	N	N	34-9	N	CS	5	HG	80	90	80
Chevrolet 6, 8, 1950, 2100, 2400	1	Ex	N		Chev	2	YT	AF	P	RS	RS	SF	Hy	3.70	4.11	3.55	37-10	37-9	39-11	Sh	N	4	HG	80	90	80
6, 2834	1	Ex	N		Chev	2	YT	AF	GF	RS	RS	SF	Hy	N	N	3.55	N	N	39-11	Sh	Sh	3½	HM	80	90	80
Chrysler																										
8, C-67	1	Ex	N		UP	2	BT[2]	AF	P	RS	RS	SF	Hy	3.73	N	3.54	41-11	N	39-11	Sh	Sh	3½	HG	80	90	80
8, C-68	1	Ex	N		UP	2	BT[2]	AF	P	RS	RS	SF	Hy	N	N	3.36	N	N	37-11	Sh	Sh	3½	HG	80	90	80
8, C-69	1	Ex	N		UP	2	BT[2]	AF	P	RS	RS	SF	Hy	N	N	3.54	N	N	39-11	Sh	Sh	3½	HG	80	90	80
8, C-70	2	Ex	AF	P	UP	3	Cr	AF	P	RS	RS	SF	Hy	N	N	3.54	N	N	39-11	Sh	Sh	5	HG	80	90	80
De Soto																										
8, S-21	1	Ex	N		NA	2	Cr	AF	P	RS	RS	SF	Hy	3.73	4.10	3.54	41-11	41-10	39-11	Sh	Sh	3½	HG	80	90	80
8, S-22	1	Ex	N		NA	2	Cr	AF	P	RS	RS	SF	Hy	3.90	4.30	3.73	39-10	43-10	41-11	Sh	Sh	3¼	HG	80	90	80
Dodge 8, D-56-1, D-56-2, D-58-3	1	Ex	N		NA	2	BT	AF	P	RS	RS	SF	Hy	3.73	4.10	3.54	41-11	41-10	39-11	Sh	Sh	3¼	HG	80	90	80
6, D-56-1	1	Ex	N		NA	2	BT	AF	P	RS	RS	SF	Hy	3.90	4.30	3.73	39-10	43-10	41-11	Sh	Sh	3¼	HG	80	90	80
Ford																										
8	1	Ex	N		Mec	2	Cr[3]	No	P	RS	RS	SF	Hy	3.89[4]	4.11[5]	3.31[6]		37-9[7]		Sh	CS	3½	HM	80	90	80
8	1	Ex	N		Mec	2	Cr[3]	No	P	RS	RS	SF	Hy	3.78[5]	3.89[7]	3.11[6]		37-9[8]		Sh	CS	3½	HM	80	90	80
Hudson																										
6, 40A, 49B	1	Ex	N		Mec	2	Cr[3]	No	GF	RS	RS	SF	Hy	3.73	3.92	3.31	41-11			Sh	Sh	3	HM	80	90	80
6, 35540	1	TT	AF	P	Mec, Sag	1	Cr	AF	P	TT	TT	SF	Hy	4.10	4.40	3.90	37-9	35-9	43-12	Sh	Sh	3	HG	80	90	N
6, 35560	1	TT	AF	P	Mec, Sag	1	Cr	AF	P	TT	TT	SF	Hy	4.10[5]	4.40[9]	3.15	41-10[5]	40-9[9]	41-13	Sh	Sh	4	HG	80	90	N
8, 35580	1	TT	AF	P	Mec, Sag	1	Cr	AF	P	TT	TT	SF	Hy	N	N	3.54	N	N	39-11	Sh	Sh	4	HG	80	90	80
Lincoln 8, 73A, 73B	1	Ex	N		Spi	2	Cr[10]	No	GF	RS	RS	SF	Hy	N	N	3.07[15]	N	N	40-13[15]	Sh	Sh	4		80	90	80
Mercury 8	1	Ex	N		Spi	2	Cr[3]	No	GF	RS	RS	SF	Hy	3.73[11]	4.09[13]	3.15[16]	41-11[11]		41-13[16]	Sh	Sh	3½	HM	80	90	80
Nash																										
8, 3540	1	TT	AF	P	Mec, Sag	1	Cr	AF	P	TT	TT	SF	Hy	4.40[12]	4.90[14]	3.90	35-8[12]	39-8[14]	43-12	Sh	Sh	3	HG	80	90	N
8, 3560	1	TT	AF	P	Mec, Sag	1	Cr	AF	P	TT	TT	SF	Hy	4.10	4.40[12]	3.15	41-10	35-8[12]	41-13	Sh	Sh	4	HG	80	90	N
8, 3580	1	TT	AF	P	Mec, Sag	1	Cr	AF	P	TT	TT	SF	Hy	N	N	3.54	N	N	39-11	Sh	Sh	4	HG	80	90	80
Nash-Hudson																										
4, 541, 542	1	Ex	N		Har, Spi	2	Cr	No	GF	RS	RS	TF	Hy	4.56	N	N	41-9	N	N	Sh	Sh	2	HG	80	90	80
6, 3510-100" WB	1	Ex	N		UP, Mec	2	Cr	AF	P	RS	RS	SF	Hy	3.77[14]	4.40[12]	3.30	34-9[14]	35-8[12]	43-12	Sh	Sh	3	HG	80	90	80
6, 3610-108" WB	2[17]	Ex	AF[18]		Mec, Spi	3[20]	Cr	AF	P[22]	RS	RS	SF	Hy	3.77[14]	4.40[12]	3.30	34-9[14]	35-8[12]	43-13	Sh	Sh	3	HG	80	90	80
Oldsmobile 8, 88	1	Ex	N		Sag	2	Cr	No	P	RS	RS	SF	Hy	3.42[24]	N	3.07	41-12[24]	N	40-13	Sh	Nu	5	HM	80	90	80
8, Super 88	1	Ex	N		Sag	2	Cr	No	P	RS	RS	SF	Hy	3.42[24]	N	3.23	41-12[24]	N	42-13	Sh	Nu	5	HM	80	90	80
8, 98	1	Ex	N		Sag	2	Cr	No	P	RS	RS	SF	Hy	3.42[24]	N	3.42	41-12[24]	N	41-12	Sh	Nu	5	HM	80	90	80
Packard																										
8, 5040	1	Ex	N		Spi[19]	2	Cr[21]	AF	GF[23]	RS	RS	SF	Hy	3.90[25]	3.90[26]	3.07[27]	39-10[25]	39-10[26]	40-13[27]	N	CN	4½	HM	80	90	80
8, 5560	1	Ex	N		Spi[19]	2	Cr[21]	AF	GF[23]	TA	TA	SF	Hy	3.90[25]	3.90[26]	3.23[28]	39-10[25]	39-10[26]	42-13[28]	N	CN	4½	HM	80	90	80
8, 5580	1	Ex	N		Spi[19]	2	Cr[21]	AF	GF[23]	TA	TA	SF	Hy	N	N	3.07[29]	N	N	43-13[29]	N	CN	4½	HM	80	90	80
Plymouth 6, P-25	1	Ex	N		NA	2	BT	AF	P	RS	RS	SF	Hy	3.73	4.10	3.73	41-11	41-10	41-11	Sh	Sh	3¼	HM	80	90	80
8, P-27	1	Ex	N		NA	2	BT	AF	P	RS	RS	SF	Hy	3.73	4.10	3.54	41-11	41-10	39-11	Sh	Sh	3¼	HM	80	90	80
Pontiac 8, 59-27	1	Ex	N		Sag	2	Cr	AF	P	RS	RS	SF	Hy	3.64	N	3.08	40-11	N	40-13	Sh	CS	3¼	HG	80	90	80
8, 59-28	1	Ex	N		Sag	2	Cr	AF	P	RS	RS	SF	Hy	3.64	N	3.23	40-11	N	42-13	Sh	CS	3¼	HG	80	90	80
Studebaker																										
6, 16G8	2	Ex	AF	P	Spi	3	Cr	No	GF	RS	RS	SF	Hy	4.10	4.56	3.54	41-10	41-9	39-11	Sh	Sh	2½	HG	80	90	80
8, 16G8 (Early)	2	Ex	AF	P	Spi	3	Cr	No	GF	RS	RS	SF	Hy	4.10[30]	4.27[31]	3.54	41-10[30]		39-11	Sh	Sh	2½[32]	HG	80	90	80
8, 16G8 (Late)	2	Ex	AF	P	Spi	3	Cr	No	GF	RS	RS	SF	Hy	3.54	3.73[33]	3.07[33]	39-11	41-11[33]	40-13[33]	Sh	Sh	3	HG	80	90	80
8, 6H	2	Ex	AF	P	Spi	3	Cr	No	GF	RS	RS	SF	Hy	3.92	4.27	3.54[34]			39-11[34]	Sh	Sh	3	HG	80	90	80
Willys 6, 6-226-A	1	Ex	N		Spi	2	Cr	AF	GF	RS	RS	SF	Hy	3.54	4.10	3.31	39-11	41-10		Sh	Sh	2½	HG	80	90	80

ABBREVIATIONS

1—3.07 (40-12) optional.
2—Rear, cross.
3—Rear, cross split joint.
4—4.11 (37-9) optional.
5—3.89 optional.
6—3.55 (39-11) optional.
7—3.78 optional.
8—Front, ball and trunnion, rear, cross and yoke with Ultramatic.
9—4.09 optional; 3.54 (39-11) with air conditioning.
10—Rear, cross flanged "U" bolt.
11—4.10 (37-9) optional.
12—4.10 (37-9) optional.
13—3.73 (41-11) optional; 3.54 (39-11) with air conditioning.
14—4.40 (35-8) optional.
15—3.31 optional but standard with air conditioning.
16—3.54 (39-11) optional; but standard with air conditioning.
17—One with Hydramatic.
18—None with Hydramatic.
19—Universal Products with Ultramatic.
20—Two with Hydramatic.
21—Front, ball and trunnion, rear, cross and yoke with Ultramatic.
22—Spicer, grease fitting.
23—Universal Products, prepack.
24—3.64 (40-11) optional.
25—3.07 (40-13), 3.23 (42-13), 3.54 (39-11), 4.10 (41-10), 4.55 optional.
26—3.54 (39-11), 4.10 (41-10) optional.
27—DeLuxe 4 door sedan, 3.23 (42-13), 3.54 (39-11), 3.90 (39-10), 4.10 (41-10) optional; Super 4 door sedan and Hardtop, 3.23 (42-13) standard, 3.07 (40-13), 3.54 (39-11), 3.90 (39-10), 4.10 (41-10) optional.
28—3.07 (40-13), 3.54 (39-11), 3.90 (39-10), 4.10 (41-10) optional.
29—3.23 (42-13), 3.54 (39-11) also standard; 3.90 (39-10), 4.10 (41-10) optional.
30—Station wagon 4.09.
31—Station wagon, 4.55.
32—Station wagon, 3.92.
33—Custom sedans only. DeLuxe and Regal, all models, 3.31.
34—Late models. DeLuxe, 3.31; State, 3.54 (39-11).
35—Station wagon, 3.
AF—Anti-friction.
BT—Ball and trunnion.
Chev—Chevrolet Div.
CN—Collapsible spacer and nut.
Cr—Cross.
CS—Collapsible spacer.
CT—Cross and trunnion.
Ex—Exposed.
GF—Grease fitting.
Har—Hardy.
HG—Hypoid gear lubricant.
HM—Hypoid or "Multi-Purpose" gear lubricant.
Hy—Hypoid.
LT—Lubricated by transmission.
Mec—Mechanics Universal Joint Div.
N—No or none.
NA—Not available.
No—Needle bearings.
Nu—Nut.
P—Prepacked.
RS—Rear springs.
Sag—Saginaw Steering Gear Div.
SB—Steel bushing.
SF—Semi-floating.
Sh—Shim.
Spi—Spicer Mfg. Div.
TA—Torque arms.
TF—Three quarter floating.
TT—Torque tube.
UP—Universal Products.
WB—Wheelbase.
YT—Yoke and trunnion.

For Directory of Car Manufacturers listed above, see page 263

TIRES AND BRAKES

PASSENGER CAR MAKE AND MODEL	TIRES		SERVICE BRAKES																					PARKING BRAKES		
								Drum			Brake Lining									Wheel Cylinder Bore							
									Diameter			Primary				Secondary											
	Rev./Mile at 30 mph	Tire Size	Type	Booster Type	Effective Area (sq. in.)	Percent Effectiveness—Rear	Type and Material	Front	Rear	Bonded or Riveted	Material	Size (length-width-thickness) Front Wheel	Size (length-width-thickness) Rear Wheel	Segments per Shoe	Material	Size (length-width-thickness) Front Wheel	Size (length-width-thickness) Rear Wheel	Segments per Shoe	Front	Rear	Master Cylinder Bore	Available Pedal Travel	Line Pressure at 100 lb. Pedal Load	Shoe Clearance Adjustment	Type of Control	Location of Control	Operates on
Buick																										
8, 40	750.0	7.10/15	H	Vac	194.6	47	CI	12	12	R	M	10⅞x2¼x⅛	10⅞x1¾x⅛	1	M	12¼x2¼x⅛	12¼x1¾x⅛	1	1½	1	1	7½	600	.015	SO	LC	RS
8, 50, 60	735.0	7.60/15	H	Vac	207.5	47	CI	12	12	R	M	10⅞x2¼x⅛	10⅞x2¼x⅛	1	M	12¼x2¼x⅛	12¼x2¼x⅛	1	1½	1	1	7½	600	.015	SO	LC	RS
8, 70	723.0	8.00/15	H	Vac	219.0	47	CI	12	12	R	M	10⅞x2½x¼	10⅞x2¼x¼	1	M	12¼x2½x¼	12¼x2¼x¼	1	1½	1	1	7½	600	.015	SO	LC	RS
Cadillac																										
8, 6062	(a)	8.00/15	H	Vac	222.0	44	CI	12	12	R	MA	11¾x2½x¼	11¾x2½x¼	1	MA	12¾x2½x¼	12¾x2½x¼	1	1½	1	1	(c)	(d)	(e)	TH	LS	RS
8, 75	(b)	9.20/15	H	Vac	233.6	44	CI	12	12	R	MA	12¾x2½x¼	12¾x2½x¼	1	MA	12¾x2½x¼	12¾x2½x¼	1	1½	1	1	(c)	(d)	(e)	TH	LS	RS
Chevrolet 6, 8, 1500, 2100, 2400	784.0	6.70/15	H	Vac	186.8	44	CI	11	11	B	MA	9⅞x2x⅛	9⅞x1¾x⅛	1	MA	11¾x2x⅛	11¾x1¾x⅛	1	1½	1	1	6⅝	900	*	TH	LS	RS
6, 2534	748.0	6.70/15	H	N	186.0	47	CI	11	11	B	MA	9⅞x2x⅛	9⅞x1¾x⅛	1	MA	11¾x2x⅛	11¾x1¾x⅛	1	1½	1	1	4½	700	*	TH	LS	RS
Chrysler 8, C-67	722.0	7.60/15	H	Vac	201.0	40	CF	12	12	B	MA	12⅛x2x⅛	12⅛x2x⅛	1	MA	12⅛x2x⅛	12⅛x2x⅛	1	1½	1¼	1	7	1400	.006	TH	LS	RT
8, C-68	707.0	8.00/15	H	Vac	201.0	40	CF	12	12	B	MA	12⅛x2x⅛	12⅛x2x⅛	1	MA	12⅛x2x⅛	12⅛x2x⅛	1	1½	1¼		6	1400	.006	TH	LS	RT
8, C-69	699.0	8.20/15	H	Vac	201.0	40	CF	12	12	B	MA	12⅛x2x⅛	12⅛x2x⅛	1	MA	12⅛x2x⅛	12⅛x2x⅛	1	1½	1¼	1	7	1400	.006	TH	LS	RT
8, C-70	673.0	8.60/15	H	N	210.0	40	Alum	12	12	B	MA			12	MA			12		1¼	1	7	918	SA	TH	LS	RT
De Soto 8, S-21, S-22	722.0	7.60/15	H	Vac	201.0	40	CI	12	12	B	MA	12⅛x2x⅛	12⅛x2x⅛	1	MA	12⅛x2x⅛	12⅛x2x⅛	1	1½	1¼	1	7	918	.006	TH	LS	RT
Dodge 8, D-55-1, D-55-2, D-55-3	733.0	7.10/15	H	Vac	173.5	40	CI	11	11	B	MA	11½x2x⅛	11½x2x⅛	1	MA	11½x2x⅛	8½x2x⅛	1	1½	1¼	1¼	7	817	.006	TH	LS	RT
8, D-56-1	748.0	6.70/15	H	Vac	186.0	40	CI	11	11	B	MA	11½x2x⅛	11½x2x⅛	1	MA	11½x2x⅛	8½x2x⅛	1	1¼	1¼	1¼	7	817	.006	TH	LS	RT
Ford 8, 2	753.0	6.70/15	H	Vac	192.0	38	CI	11	11	R	MA	11¾x2¼x⅛	11¾x1¾x⅛	1	MA	11¾x2¼x⅜	11¾x1¾x⅛	1	1½	⅝	1	6½	780	.010	TH	LS	RS
8, 40A, 40B	753.0	6.70/15	H	N	175.5	38	CI	11	11	R	MA	10¾x1¾x⅛	11¾x1¾x⅛	1	MA	11¾x2¼x⅜	11¾x1¾x⅛	1	1½	⅝	1	6½	700	.010	TH	LS	RS
Hudson 6, 35540	742.0	6.70/15	H	Vac	185.4	44	CI	10	10	R	MA	8½x2¼x⅛	8½x1¾x⅛	1	MA	10¾x2¼x⅛	10¾x1¾x⅛	1	1¼	⅝	1	6	650	.015	TH	UP	RS
6, 35560; 8, 35580	726.0	7.10/15	H	Vac	192.1	44	CI	11	11	R	MA	9¾x2¼x⅛	9¾x2x⅛	1	MA	12x2¼x⅛	12x2x⅛	1	1½	⅝	1	6	840	.015	TH	Ra	RS
Lincoln 8, 73A, 73D	714.0	8.00/15†	H	Vac	207.5	41	CI	12	12	R	MA	10½x2½x⅛	10½x2x⅛	1	MA	12¾x2½x⅛	12¾x2x⅛	1	1½	⅝	1	6½	650	.010	TH	LS	RS
Mercury 8	736.0	7.10/15	H	Vac	190.9	38	CI	11	11	R	MA	9⅞x2½x⅛	9⅞x2x⅛	1	MA	11¾x2½x⅛	11¾x2x⅛	1	1½	⅝	1	6½	740	.010	TH	LS	RS
Nash 8, 5540	742.0	6.70/15	H	Vac	185.4	44	CI	10	10	R	MA	8½x2¼x⅛	8½x1¾x⅛	1	MA	10¾x2¼x⅛	10¾x1¾x⅛	1	1¼	⅝	1	6	650	.015	TH		RS
6, 5560; 8, 5580	726.0	7.10/15	H	Vac	192.1	44	CI	11	11	R	MA	9½x2¼x⅛	9½x2¼x⅛	1	MA	12x2¼x⅛	12x2x⅛	1	1¼	⅝	1	6	840	.015	TH	Ra	RS
Nash-Hudson 4, 541, 542	805.0	5.90/13	H	N	75.8	40	CI	8	8	B	MA	7¼x1¼x⅛	7¼x1¼x⅛	1	MA	7¼x1¼x⅛	7¼x1¼x⅛	1	¾	⅝	¾	4½	1000	F	TH	LS	RS
6, 5610	765.0	6.40/15	H	N	104.3	36	CI	9	9	R	MA	9¼x2x⅛	9¼x1¼x⅛	1	MA	7¼x1¼x⅛	8¼x1¼x⅛	1	1	⅝	1	6½	940	F	TH		RS
Oldsmobile 8, 88	740.2	7.10/15	H	Vac	191.7	44	CI	11	11	R		9½x2½x⅛	9½x2x⅛	1		12⅛x2½x⅛	12⅛x2x⅛	1	1⅛	⅝	1	6½	735	.015	TH	LS	RS
8, Super 88, 98	721.3	7.60/15	H	Vac	191.7	44	CI	11	11	R		9½x2½x⅛	9½x2x⅛	1		12⅛x2½x⅛	12⅛x2x⅛	1	1⅛	⅝	1	6½	735	.015	TH	LS	RS
Packard 8, 5540, 5560	731.0	7.60/15	H	Vac	191.8	40	CI	11	11	R		9⅞x2½x⅛	9⅞x2x⅛	1		12x2¼x⅛	12x2x⅛	1	1½	1⅛	1	6¾	710	.010	TH	LS	RS
8, 5580	717.0	8.00/15	H	Vac	200.3	40	CI	12	12	R		11½x2¼x⅛	11½x2x⅛	1		13x2¼x⅛	13x2x⅛	1	1½	1	1	6¾	710	.010	TH	LS	RS
Plymouth 8, P-26	748.0	6.70/15	H	Vac	152.0	40	CI	10	10	B	MA	10½x2x⅛	10½x2x⅛	1	MA	10½x2x⅛	8x2x⅛	1	1½	1½	1¼	7	817	.006	TH	LS	RT
8, P-27	748.0	6.70/15	H	Vac	166.2	38	CI	11	10	B	MA	11½x2x⅛	10½x2x⅛	1	MA	11½x2x⅛	8x2x⅛	1	1¼	1¼	1¼	7	817	.006	TH	LS	RT
Pontiac 8, 55-27, 55-28	734.0	7.10/15	H	Vac	179.0	44	CI	12	11	R	MA	10⅞x2¼x⅛	9⅞x1¾x⅛	1	MA	12⅛x2¼x⅛	11⅛x1¾x⅛	1	1⅛	⅛	1	6⅛	750	.015	TH	LS	RS
Studebaker 8, 1G30	(f)	(g)	H	Vac	166.0	38	CI	10	9	R	MA	10½x2x⅛	9½x2x⅛	1	MA	10½x2x⅛	9½x2x⅛	1	1	⅛	1	6	890	.007	TH	Ra	RS
8, 1G30	753.0	6.70/15	H	Vac	195.3	38	CI	11	10	R	MA	12x2¼x⅛	10½x2x⅛	1	MA	12x2¼x⅛	10½x2x⅛	1	1⅛	⅝	1	6	890	.007	TH	Ra	RS
8, 6H	736.0	7.10/15	H	Vac	195.3	38	CI	11	10	R	MA	12x2¼x⅛	10½x2x⅛	1	MA	12x2¼x⅛	10½x2x⅛	1	1⅛	⅝	1	6	890	.007	TH	Ra	RS
Willys 6, 6-226-A	762.0	6.40/15	H	N	122.9	38	CI	9	9	R	MA	9½x2x⅛	9½x2x⅛	1	MA	7¼x1¾x⅛	7¼x1¾x⅛	1	1½	1	1	7	650	F	TH	LS	RS

ABBREVIATIONS

*—Adjust to light drag and back off 7 notches.
†—Convertible and air conditioning equipped cars, 8.20/15.
(a)—Firestone, 711.0; U. S. Royal, 730.0; Goodrich, 717.0.
(b)—Firestone, 706.0; U. S. Royal, 712.0; Goodrich, 706.0.
(c)—Standard brakes, 5½; power brakes, 4½.
(d)—Standard brakes, 875; power brakes, 900.
(e)—Top, .010; bottom, .015.
(f)—All except station wagon, 771.0; station wagon, 753.0.
(g)—All except station wagon, 8.40/15; station wagon, 6.70/15.
Alum—Aluminum.
B—Bonded.
CF—Centrifuge.
CI—Cast iron.
F—Floating.
H—Hydraulic, internal expanding.
LC—Left side cowl panel.
LS—Left of steering column.
M—Molded extruded.
MA—Molded asbestos.
N—No or none.
R—Riveted.
Ra—Right of steering column.
RS—Rear service brakes.
RT—Rear of transmission.
SA—Self adjusting.
SO—Step on, left foot operated.
TH—"T" handle.
UP—Under instrument panel.
Vac—Vacuum.

For Directory of Car Manufacturers listed above, see page 263

FRONT SUSPENSION AND STEERING

PASSENGER CAR MAKE AND MODEL	FRONT SUSPENSION											STEERING																		
		Spring						Shock Absorbers						Turning Diameter			Mechanical					Power						Linkage			
																	Gear													
																			Ratios (to-1)						Ratios (to-1)					
	Type	Type	Free Length	I. D. of Coil	Spring Rate (lb. per in.)	Rate at Wheel (lb. per in.)	Normal Load (lb. @ rated length)	Make	Type	Piston Diam. (in.)	Stabilizer—Type	Type	Wheel Diameter	Wall to Wall (outside front)	Curb to Curb (outside front)	Inside Wheel Angle with Outside Wheel at 20 (deg.)	Type	Make	Gear	Over-all	Type	Make	Type	Gear	Over-all	Pump Driven by	Type	Location	Drag Link	Tie Rods
Buick		ICS	Co	15	4½	350	92	Del	D	1	U	Mec*	16	44'0"	41'7"	22½	BWN	Sag	22.0	26.7	Hy	Sag	BWN	21.3	24.1	B	PDL	R	Tr	2
	8, 50	ICS	Co	15	4½	360	95	Del	D	1	U	Pow	16	45'0"	43'0"	22½	N				Hy	Sag	BWN	21.3	24.1	B	PDL	R	Tr	2
	8, 70	ICS	Co	15	4½	360	95	Del	D	1	U	Pow	16	45'0"	43'0"	22½	N				Hy	Sag	BWN	21.3	24.1	B	PDL	R	Tr	2
	8, 90	ICS	Co	(a)	4	350		Del	D	1	U	Pow	16	47'4"	45'0"	22½	N				Hy	Sag	BNS	19.2	21.3	B	PDL	R	Tr	2
Cadillac	8, 60	ICS	Co	(a)	4	350		Del	D	1	U	Pow	16	48'10"	43'9"	22½	N				Hy	Sag	BNS	19.2	21.3	B	PDL	R	Tr	2
	8, 62	ICS	Co	(b)	4	350		Del	D	1	U	Pow	16	54'1"	51'8"	22½	N				Hy	Sag	BNS	19.2	21.3	B	PDL	R	Tr	2
	8, 75	ICS	Co	16⅛	4	400		Del	D	1	U	Pow	16	54'1"	51'8"	22½	N				Hy	Sag	RB	20.0	25.7	B	RL	R	Lg	2
Chevrolet	6, 8, 1500, 2100, 2400	ICS	Co	(c)	3½	311	109	(d)	Del	D	1	N	Mec*	16	41'0"	39'0"	24	RB	Sag	20.0	25.7	Hy	Sag	RB	20.0	25.7	B	RL	R	Lg	2
	6, 2934	ICS	Co	13½	3½	300	110	1145-9½	Del	D	1	U	Mec	17½	39'0"	37'0"		WS	Sag	16.0	16.0	N						CP	R	Lg	2
Chrysler	8, C-67	ICS	Co		4	480	NA	2295-11L	Chr	D	1	U	Mec*	16	46'6"	43'9"		WR	Gem	20.4	NA	Hy	Chr	RN	16.2	NA	G	ETR	R	Tr	2
	8, C-68	ICS	Co		4	480	NA	2475-11L	Chr	D	1	U	Mec*	16	46'6"	43'9"		WR	Gem	20.4	NA	Hy	Chr	RN	16.2	NA	G	ETR	R	Tr	2
	8, C-69	ICS	Co		4	515	NA	2760-11L	Chr	D	1	U	Pow	16	47'4"	45'2"		N				Hy	Chr	RN	16.2	NA	G	ETR	R	Tr	2
	8, C-70	ICS	Co		4	600	NA	3150-11L	Chr	D	1	U	Pow	16	52'8"	51'11"		N				Hy	Chr	RN	16.2	NA	G	ETR	R	Lg	2
De Soto	8, S-21, S-22	ICS	Co		4	480	NA	2285-11L	Chr	D	1	U	Mec*	16	46'4"	43'9"		WR	Gem	20.4	NA	Hy	Chr	RN	16.2	NA	G	ETR	R	Tr	2
Dodge	8, D-55-1, D-56-2, D-58-3	ICS	Co		4	445	NA	1680-11L	Chr	D	1	N	Mec*	16	43'0"	42'3"		WR	Gem	16.2	NA	Hy	Chr	RN	16.2	NA	G	LST	R	N	2
	6, D-56-1	ICS	Co		4	415	NA	1475-11L	Chr	D	1	U	Mec*	16	43'0"	42'10"		WR	Gem	18.2	NA	Hy	Chr	RN	16.2	NA	G	LST	R	N	2
Ford	6	ICS	Co	15⅛	4½	360	105	1925-9½	Hou	D	1	U	Mec*	16	NA	41'2"	24½	WR	Fo	20.1	25.3	Hy	Ben	WR	20.1	25.3	B	Par	R	Tr	2
	8	ICS	Co	15½	4½	360	105	2000-9½	Hou	D	1	U	Mec*	16	NA	41'2"	24½	WR	Fo	20.1	25.3	Hy	Ben	WR	20.1	25.3	B	Par	R	Tr	2
	8, 40A, 40B	ICS	Co	14½	4½	290	87	1540-	Hou	D	1	U	Mec*	17	NA	39'0"	25	WR	Fo	20.1	20.1	Hy	Ben	WR	20.1	20.1	B	Par	R	Tr	2
Hudson	6, 3554S	ICS	Co		5½	100	NA	920-8½	Mon	D	1	N	Mec*	16	41'10"	39'3"	24	WR	Gem	20.0	26.3	Hy	Mon	WR	18.2	23.2	B	BS	R	Tr	2
	6, 3556S	ICS	Co		5½	115	NA	1000-8½	Mon	D	1	U	Mec*	16	45'2"	42'8"	26	WR	Gem	20.0	26.3	Hy	Mon	WR	18.2	22.2	B	BS	R	Tr	2
	8, 3558S	ICS	Co		5½	123	NA	1200-8½	Mon	D	1	U	Mec*	16	48'3"	45'0"	23½	WR	Gem	20.4	26.1	Hy	Sag	RN	19.0	21.3	B	Par	R	Tr	2
Lincoln	8, 73A, 73B	ICS	Co	16½	4½	400	119	2450-9½	Hou	D	1½	U	Mec*	16	NA	42'4"	24½	WR	Fo	20.1	25.4	Hy	Ben	WR	20.1	25.4	B	Par	R	Tr	2
Mercury	8	ICS	Co	15½	4½	360	107	2150-9½	Hou	D	1	U	Mec*	16	45'8"	42'9"	23	WR	Gem	20.0	23.4	Hy	Mon	WR	18.2	20.8	B	BS	R	Tr	2
Nash	6, 5540	ICS	Co		5½	100	NA	920-8½	Mon	D	1	U	Mec*	16	47'0"	44'4"	25	WR	Gem	20.0	26.3	Hy	Mon	WR	18.2	23.2	B	BS	R	Tr	2
	6, 5560	ICS	Co		5½	115	NA	1000-8½	Mon	D	1	U	Mec*	16	47'0"	44'4"	26	WR	Gem	20.0	26.3	Hy	Mon	WR	18.2	22.2	B	BS	R	Tr	2
	8, 5580	ICS	Co		5½	123	NA	1200-8½	Mon	D	1	U	Mec*	16	47'0"	44'4"	26	WR	Gem	20.0	26.3	Hy	Mon	WR	18.2	22.2	B	BS	R	Tr	2
Nash-Hudson	6, 541, 542	ICS	Co		3½	100	96	546-	Gir	D	1	N	Mec	17	39'11"L	37'9"L	24	CL	CG	13.5	21.0	N						BS	F	Tr	2
	6, 5510-108" WB	ICS	Co		3½	110	109	(e)	D-M	D	1	N	Mec	17	37'11"	35'7"	21	WR	Gem	20.0	22.0	N						BS	F	Tr	2
	6, 5510-108" WB	ICS	Co		3½	110	109	(e)	D-M	D	1	N	Mec	17	40'4"	38'1"	21	WR	Gem	20.0	22.0	N						BS	F	Tr	2
Oldsmobile	8, 88	ICS	Co		4½	325	100	2075-	Del	D	1	U	Mec*	16	44'8"	42'0"	23	BN	Sag	21.3	27.5	Hy	Sag	BN	21.3	25.7	B	Sym	R	Tr	2
	8, Super 88	ICS	Co		4½	325	100	2150-	Del	D	1	U	Mec*	16	44'8"	42'0"	23	BN	Sag	21.3	27.5	Hy	Sag	BN	21.3	25.7	B	Sym	R	Tr	2
	8, 98	ICS	Co		4½	325	100	2200-	Del	D	1	U	Mec*	16	45'8"	43'0"	23	BN	Sag	21.3	27.5	Hy	Sag	BN	21.3	25.7	B	Sym	R	Tr	2
Packard	8, 5540	ICS	Co		4¼	300	90	2040-20⅛	D-M	D	1	U	Mec*	16	(h)	(j)	23½	WR	Gem	22.3	30.9	Hy	Mon	WR	18.2	22.0	B	SI	R	Tr	2
	8, 5560	ITB	TB	(f)					D-M	D	1	U	Mec*	16	(h)	(j)	23½	WR	Gem	22.3	30.9	Hy	Ben	WR	18.2	22.0	B	SI	R	Tr	2
	8, 5580	ITB	TB	(g)					D-M	D	1	U	Mec*†	19	(i)	(k)	23½	WR	Gem	22.3	30.9	Hy	Ben	WR	18.6	22.5	B	SI	R	Tr	2
Plymouth	6, P-26	ICS	Co		4	368	NA	1415-11L	Chr	D	1	U	Mec*	17½	42'2"	40'1"		WR	Gem	18.2	NA	Hy	Chr	RN	16.3	NA	G	ETR	R	Tr	2
	8, P-27	ICS	Co		4	415	NA	1625-11L	Chr	D	1	U	Mec*	17½	42'2"	40'0"		WR	Gem	18.2	NA	Hy	Chr	RN	16.3	NA	G	ETR	R	N	2
Pontiac	8, 55-27	ICS	Co		3½	(l)	(m)	(n)	Del	D	1	U	Mec*	16	45'1"L	42'6"L	22½	BB	Sag	20.0	25.0	Hy	Sag	BB	19.1	24.0	B	Par	R	N	2
	6, 55-28	ICS	Co		3½	(l)	(m)	(n)	Del	D	1	U	Mec*	16	45'8"L	42'11"L	22½	BB	Sag	20.0	25.0	Hy	Sag	BB	19.1	24.0	B	Par	R	N	2
Studebaker	6, 16G6	ICS	Co		4⅛	(o)	(r)	(u)	H-M	D	1	U	Mec*	(x)	(y)	(z)	23	C-W	R-S	(1)	(3)	Hy	Sag	RN	21.3	20.0	B	ETR	R	Lg	2
	8, 16G8	ICS	Co		4⅛	(p)	(s)	(v)	H-M	D	1	U	Mec*	(x)	(y)	(z)	23	C-W	R-S	(2)	(4)	Hy	Sag	RN	21.3	20.0	B	ETR	R	Lg	2
	8, 6H	ICS	Co		4⅛	(o)	(t)	(w)	H-M	D	1	U	Mec*	(x)	(y)	(z)	23	C-W	R-S	(2)	(4)	Hy	Sag	RN	21.3	20.0	B	ETR	R	Lg	2
Willys	6, 9-226-A	ICS	Co	18½	3½	110	110	975-10⅝	M-G	D	1	N	Mec*	16	43'1"L	40'3"L	19L	WR	Gem	20.0	22.4	Hy	Mon	WR	20.0	22.5	B	TL	R	N	2

ABBREVIATIONS

*—Power steering optional.
†—Power steering standard on Cadillacs.

(a)—6219, 6237, 6237D, 16⅝.
(b)—6019, 6267, 6267S, 16⅝.
(c)—All with standard transmission, 15⅞; 6 cyl. with Powerglide, 1541; 8 cyl. with Powerglide, 15⅝.
(d)—All with standard transmission; 1700; 6 cyl. with Powerglide, 1830; 8 cyl. with Powerglide, 1765.
(e)—With standard transmission and overdrive, 755-10⅝; with Hydra-matic, 810-10⅝.
(f)—Long bar for suspension, 106; short bar for load compensator, 46½.
(g)—Long bar for suspension, 111; short bar for load compensator, 51.
(h)—Mechanical steering, 46' 0"; power steering, 44' 0".
(i)—Mechanical steering, 48' 0"; power steering, 46' 0".
(j)—Mechanical steering, 43' 0"; power steering, 41' 0".
(k)—Mechanical steering, 45' 0"; power steering, 43' 0".
(l)—With standard transmission, 290; with Hydra-matic, 325.
(m)—With standard transmission, 81; with Hydra-matic, 90.
(n)—With standard transmission, 2085-10; with Hydra-matic, 2185-10.
(o)—All except station wagon, 280; station wagon, 340.
(p)—All except station wagon, 296; station wagon, 375.
(q)—All except sedan, 296; sedan, 325.
(r)—All except station wagon, 117; station wagon, 141.
(s)—All except station wagon, 125; station wagon, 151.
(t)—All except sedan, 125; sedan, 136.
(u)—All except station wagon, 1440-8⅛; station wagon, 1440-8½.
(v)—Sedans, 1565-8⅜; coupes and hard tops, 1565-8½; station wagons, 1565-9¼.
(w)—All except sedan, 1565-8½; sedan, 1565-8⅞.
(x)—All except coupe and hardtop, 18; coupe and hardtop, 17¼.
(y)—All except coupe and hardtop, 41' 6" right and 42' 6" left; coupe and hardtop, 43' 0" right and 44' 0" left.
(z)—All except coupe and hardtop, 38' 6" right and 39' 6" left; coupe and hardtop, 40' 0" right and 41' 0" left.
(1)—Ross, 15.4; Saginaw, 19.0.
(2)—Ross, 18.5; Saginaw, 19.0.
(3)—Ross, 19.5; Saginaw, 20.0.
(4)—Ross, 24.0; Saginaw, 20.0.

B—Belt. BB—Recirculating ball bearing.
Ben—Bendix. BN—Ball nut.
BNS—Ball nut and sector.
BS—Ball and socket.
BWN—Ball bearing worm and nut.
CG—Cam Gears Ltd.
Chr—Chrysler Corp.
CL—Cam and lever. Co—Coil.
CP—Center point.
C-W—Cam and lever or worm and roller.
D—Direct. Del—Delco Products Div.
D-M—Delco or Monroe.
ETR—Equal length tie rods.
F—Front.
Fo—Ford Motor Co.
G—Gemmer Mfg. Co.
Gen—Generator. Gir—Girling.
H-M—Houde or Monroe.
Hou—Houde. Hy—Hydraulic.
ICS—Independent with coil springs.
ITB—Independent with torsion bars.
L—Left. LI—Link.
Lg—Longitudinal. LI—Linkless.
LST—Long and short tie rods.
Mec—Mechanical.
M-G—Monroe or Gabriel.
Mon—Monroe Auto Equipment Co.
N—No or none.
NA—Not available.
Par—Parallelogram.
PDL—Parallel drag link.
Pow—Power.
R—Rear of wheels.
RB—Semi-reversible recirculating ball.
RL—Relay link.
RN—Recirculating ball nut.
R-S—Ross or Saginaw.
Sag—Saginaw Steering Gear Div.
SI—Side idler.
Sym—Symmetrical.
T-B—Torsion bars.
TL—Three link.
Tr—Transverse.
WB—Wheel base.
WR—Worm and roller.
WS—Worm and sector.

For Directory of Car Manufacturers listed above, see page 263

WHEEL ALIGNMENT, AND REAR SUSPENSION

PASSENGER CAR MAKE AND MODEL	ALIGNMENT: Kingpin: Inclination at Camber (deg.)	Kingpin: Diameter	Kingpin: Bearings: Upper	Kingpin: Bearings: Lower	Kingpin: Bearings: Thrust	Wheel Alignment: Caster (deg.)	Wheel Alignment: Camber (deg.)	Wheel Alignment: Toe In (Outside tread—in.)	Steering Knuckle Type	Wheel Spindle: Diameter: Inner Bearing	Wheel Spindle: Diameter: Outer Bearing	Wheel Spindle: Thread Size	Wheel Spindle: Bearing Type	REAR SUSPENSION: Type	Spring: Type	Spring: Material	Spring: Length	Spring: Width	Spring: No. Leaves or Coil I. D.	Spring: Spring Rate (lb. per in.)	Spring: Rate at Wheel (lb. per in.)	Spring: Normal Load (lb. @ rated height)	Shock Absorbers: Make	Shock Absorbers: Type	Shock Absorbers: Piston Diameter
Buick 8, 40, 50 8, 50, 70	0°@¼° 0°@½°	.8615 .8615	Bu Bu	Bu Bu	Ba Ba	¼N to ½P ¼N to ½P	¼N to ¾P ¼N to ¾P	0 to ⅛ 0 to ⅛	RE RE	1.3738 1.3738	.8429 .8429	⅞-16 ⅞-16	Ba Ba	CS CS	Co Co	9260 9260	19½ 19½	2½ 2½	5½ 5½	100 115	100 115	960-9⅛ 1070-9¼	Del Del	Lo Lo	1½ 1½
Cadillac 8, 60, 62 8, 75	8°51' @ 0° 8° 51' @ 0°	.9240 .9240	Bu Bu	Bu Bu	Ba Ba	0 to 1N 0 to 1N	½N to ½P* ½N to ½P*	⅛ to ¼ ⅛ to ¼	RE RE	2.9630 2.9630	2.2500 2.2500	¾-20 ¾-20	Ba Ba	LS LS	SE SE	9260 CA5	56½ 58	2½ 2	6 4	140 112	....	1440-88½ 1050	Del Del	D D	1 1
Chevrolet 6, 8, 1500, 2100, 2400 6, 2634	4° 4°	.8663 .8663	Bu Bu	Bu Bu	Ba Ba	0 to 1P 0 to 1N	0 to 1N 0 to 1N	⅛ to ¼ 0 to ⅛	RE RE	1.2493 1.2813	.7493 .7501	¾-20 ¾-20	Ba Ba	LS LS	SE SE	CA5 CA5	58 51	2 2	4 4	112 115	 115	1050 750	Del Del	D D	1 1
Chrysler 8, C-67 8, C-68 8, C-69 8, C-70	5½° @ 0° 5½° @ 0° 5½° @ 0° 7° @ 0°	.7950 .7950 .9220 .9220	SR SR SR SR	Bu Bu Bu Bu	Ba Ba Ba Ba	(d) (d) 0 to 2N† 0 to 2N†	½P to ½PA ½P to ½PA ½P to ½PA ½P to ½PA	0 to ⅛• 0 to ⅛• 0 to ⅛• 0 to ⅛•	RE RE RE E	1.2500 1.2900 1.3100 1.3100	.7500 .7500 .8000 .8000	¾-16 ¾-16 ¾-16 ¾-16	TR TR TR TR	LS LS LS LS	SE SE CC5 CC5	St St CC5 CC5	55 55 55 55	2½ 2½ 2½ 2½	6 6 6 7	100 100 95 140	NA NA NA NA	920-85½ 920-85½ 1000-85½ 1450-85½L	Chr Chr Chr Chr	D D D D	1 1 1 1
De Soto 8, S-21 S-22	5½° @ 0° 5½° @ 0°	.7950 .7950	SR SR	Bu Bu	Ba Ba	(d) (d)	½P to ½PA ½P to ½PA	0 to ⅛• 0 to ⅛•	RE RE	1.2500 1.2500	.7500 .7500	¾-16 ¾-16	TR TR	LS LS	SE SE	St St	55 52	2½ 2½	4 5	93 90	NA NA	840 720-82½	Chr Chr	D D	1 1
Dodge 8, D-55-1, D-55-2, D-55-3 8, D-55-1	5½° @ 0° 5½° @ 0°	.7950 .7950	Ro Ro	Bu Bu	Ba Ba	(d) (d)	½P to ½PA ½P to ½PA	0 to ⅛• 0 to ⅛•	RE RE	1.2500 1.2500	.7500 .7500	¾-16 ¾-16	TR TR	LS LS	SE SE	St St	52 52	2½ 2½	5 5	88 88	NA NA	660-82½ 660-82½	Chr Chr	D D	1 1
Ford 8, 8 8, 40A, 40B	7°7' @ 0°22' 7°7'	None None	BJ BJ	BJ BJ	Ba Ba	½P to 1½P‡ ½P to 1½P‡	0 to 1PA 0 to 1PA	⅛ to ½ ⅛ to ½	BJ RE	1.2598 1.2500	.7496 .7500	¾-16 ¾-16	TR TR	LS CS	SE Co	5147 9260	53	2	5 4½	110 135	115 NA	810 940-10⅛	Hou Mon	D D	1 1
Hudson 8, 3S40 6, 3S60; 8, 3S60	3° 36' 3° 36'	.9420 .9420	St St	St St	Ba Ba	(e) 0 to ½PP	¼N to ¼PP ¼N to ¼PP	⅛ to ¼ ⅛ to ¼	RE RE	1.2500 1.2500	.7500 .7500	¾-16 ¾-16	TR TR	CS CS	Co Co	9260 9260	.....	.....	4½ 4½	135 135	NA NA	940-10⅛ 940-10⅛	M-D M-D	D D	1 1
Lincoln ..... 8, 73A, 73B **Mercury** 8	7½° @ ¾° 7° @ ¾°	None None	BJ BJ	BJ Ba	Ba Ba	0 to 1½N‡ 0 to 1½N‡	0 to ½PA 0 to ½PA	⅛ to ⅛ ⅛ to ⅛	BJ BJ	1.3116 1.2496	.6116 .7496	¾-16 ¾-16	TR TR	LS LS	SE SE	5147 5147	54¾ 53	2 2	8 6	105 105	110 105	980 980	Hou F-H	D D	1½ 1
Nash 8, 3S40 6, 3S60, 8, 3S60	0½° 0½°	ISK ISK	Ro Ro	Th Th	Ba Ba	(e) 0 to 1½PP	¼N to ¼PP ¼N to ¼PP	⅛ to ⅛ ⅛ to ⅛	PK PK	1.2560 1.2560	.7500 .7500	¾-16 ¾-16	TR TR	CS CS	Co Co	9260 9260	.....	.....	4½ 4½	135 135	NA NA	940-10⅛ 940-10⅛	Mon M-D	D D	1 1
Nash-Hudson ..... 4, 3A1, 3A2 6, 3S10 108" WB 8, 3S10 108" WB	0½° 8° 0°	.6870 ISK ISK	Bu Ro Ro	Bu Th Th	Pl Ba Ba	2P to 3P ¼P to 1¼P* ¼P to 1¼P*	½P to 1½P ¼P to ¾PP ¼P to ¾PP	0 to ⅛ ⅛ to ⅛* ⅛ to ⅛*	E PK PK	.9940 1.2500 1.2500	.6650 .7500 .7500	⅞-16 ¾-16 ¾-16	Ba TR TR	LS LS LS	....	5150 5155 5155	43 45 48	1¾ 1¾ 1¾	75 (f) (f)	75 (g) (g)	422 129 125	M-D M-D M-D	D D D	1 1 1
Oldsmobile 8, 98 8, 98	5°51'10" @ 0° 5°51'10" @ 0°	.8618 .8618	Bu Bu	Bu Bu	Ba Ba	0 to ⅛N 0 to ⅛N	¼N to ¼P ¼N to ¼P	⅛ to ⅛* ⅛ to ⅛*	RE RE	1.3739 1.3739	.7483 .7483	¾-20 ¾-20	Ba Ba	LS LS	SE SE	5155 5155	58 58	2½ 2½	5 5	95 100	115 120	960-89‡‡ 975-89‡‡	Del Del	D D	1 1
Packard 8, 3S40 8, 3S60 8, 3S80	5½° @ 0° 5½° @ 0° 5½° @ 0°	.8663 .8663 .8663	No No No	(j) (j) (j)	Ba Ba Ba	½N to 1½N ½N to 1½N ½N to 1½N	¼N to ¾P ¼N to ¾P ¼N to ¾P	0 to ⅛ 0 to ⅛ 0 to ⅛	RE RE RE	1.2500 1.2500 1.3120	.7500 .7500 .8120	¾-16 ¾-16 ¾-16	TR TR TR	TB TB TB	TB TB TB	AS AS AS	54¾ (k) (l)	2½	8	95	95	950	M-D M-D M-D	D D D	1 1 1
Plymouth ..... 6, P-26, 8, P-27 **Pontiac** 8, 5S-27 8, 5S-28	5½° @ 0° NS NS	.7950 .8615 .8615	Bu Bu Bu	Bu Bu Bu	Ba Ba Ba	0 to 2N† ½N to 1½N ½N to 1½N	½P to ½PA 0 to 1P 0 to 1P	0 to ⅛• 0 to ⅛ 0 to ⅛	RE RE RE	1.2500 1.3740 1.3740	.7500 .7480 .7480	¾-16 ¾-20 ¾-20	TR Ba Ba	LS LS LS	..... SE SE	Ch5 5100 5100	52 58 60	2½ 2 2	4 5 6	88 110 120	NA NA NA	880-82½ 900L 950L	Chr Del Del	D D D	1 1 1
Studebaker ..... 8, 16G6 8, 16G6 8, 9H **Willys** 6, 6-226-A	6° @ 0° 6° @ 0° 6° @ 0° 6°	(m) (m) (m) ISK	Bu Bu Bu Th	No No No Th	S-T S-T S-T Th	1N to 2½N** 1N to 2½N** 1N to 2½N** ½P to 1½P	0 to 1P†† 0 to 1P†† 0 to 1P†† ¾P to 1¼P	⅛ to ½ ⅛ to ½ ⅛ to ½ ⅛ to ⅛	RE RE RE PK	1.2900 1.2500 1.2900 1.2498	.7500 .7500 .7500 .7498	¾-16 ¾-16 ¾-16 ⅞-16	TR TR TR TR	LS LS LS LS	SE SE SE SE	5150 5150 5150 4060	50 50 50 48	2½ 2½ 2½ 2	(n) (n) 4 7	(o) (p) 90 100	(q) (r) 100 100	(s) (s) 700 710	H-M H-M H-M M-G	D D D D	1 1 1 1

ABBREVIATIONS

*—Left side to be ¼°P to ½°P greater than right side.
†—Preferred setting; left side, 0° to ¾°N; right side, 0°.
•—Preferred setting; left side, ½°P; right side, 0°.
•—Zero preferred.
‡—Not to vary more than ½° from one side to other.
‡‡—Not to vary more than ¼° from one side to other.
■—½°P preferred.
•—1°P preferred.
^—½ preferred.

**—Not to vary more than ¾° from one side to other.
††—Left side to be ½° greater than right side.
(a)—6019, 6219, 6237, 6237D, 113; 6267, 62678, 120.
(b)—6019, 6219, 6237, 6237D, 1190–57½; 6267, 62678, 1230–57½.
(c)—Upper, 1.3110; lower, 1.2490.
(d)—0° to 2°N; 2°N preferred with manual steering; 0° preferred with power steering; within these limits it is recommended that the left side be between 0° and ½° more negative than the right side.
(e)—Manual steering, 0° to ¾°P, ½°P preferred; power steering ½°P to 1°P, 1°P preferred.
(f)—Five standard; six optional.
(g)—100 with 5 leaf spring; 125 with 6 leaf spring.
(h)—650–46¾ with 3 leaf spring; 760–46¾ with 6 leaf spring.
(i)—670–48¾ with 5 leaf spring; 760–48¾ with 6 leaf spring.
(j)—Manual steering, bushing; power steering, needle bearings.
(k)—Long bar, 106; short bar, 46¼.
(l)—Long bar, 111; short bar, 51.
(m)—Upper, 1.2800; lower, 1.1250.
(n)—All except station wagon, 4; station wagon, 6.
(o)—All except station wagon, 110; station wagon, 143.
(p)—All except station wagon, 90; station wagon, 143.
(q)—All except station wagon, 115; station wagon, 151.
(r)—All except station wagon, 100; station wagon, 151.
(s)—All except station wagon, 700; station wagon, 825.
AS—Alloy steel.
Ba—Ball bearing.
BJ—Ball joint.
S-T—Ball or tapered roller bearing.
Bu—Bushing.
CA5—Chromium alloy steel.
CC5—Chromium carbon steel.
Chr—Chrysler Corp.
Ch5—Chromium steel.
Co—Coil spring. CS—Coil springs.
D—Direct acting.
Del—Delco Products Div.
E—Elliot.
F-H—Ford or Houde.
Gir—Girling.
H-M—Houde or Monroe.
Hou—Houde.
ISK—Integral with steering knuckle.
L—Left. Le—Lever.
LS—Leaf springs.
M-D—Monroe or Delco.
M-G—Monroe or Gabriel.
Mon—Monroe Auto Equipment Co.
N—Negative.
NA—Not available.
No—Needle bearings.
NS—Not specified.
P—Positive.
PK—Part of kingpin.
Pl—Plain.
RE—Reverse Elliot.
Ro—Roller bearing.
SE—Semi-elliptic.
SJ—Spherical joint.
SR—Straight roller bearing.
St—Steel.
TB—Torsion bar. TR—Tapered roller.
Th—Threaded. WB—Wheelbase.

For Directory of Car Manufacturers listed above, see page 263

PASSENGER CARS 1955

BRITISH

MAKE AND MODEL	ENGINE: Number of Cylinders, Bore and Stroke (In.)	ENGINE: Maximum Brake Hp. at Specified R.P.M.	ENGINE: Piston Displacement (Cu In.)	ENGINE: Compression Ratio (To 1)	ENGINE: Cylinder Arrangement	ENGINE: Valve Location	ENGINE: Piston Material	ENGINE: Camshaft Drive	GENERAL DATA: Wheelbase (In.)	TREAD: Front (In.)	TREAD: Rear (In.)	OVERALL DIMENSIONS (In.): Length Including Bumpers and Bumper Guards	OVERALL DIMENSIONS (In.): Width	OVERALL DIMENSIONS (In.): Height — Road to Roof, No Load	GENERAL DATA: Tires (In.)	GENERAL DATA: Oil Pressure to—	GENERAL DATA: Carburetors — No. Used and Type	GENERAL DATA: Cooling System	GENERAL DATA: Shifting Method	GENERAL DATA: No. of Forward Speeds	REAR AXLE: Final Drive Type	REAR AXLE: Gear Ratio (To 1)	REAR AXLE: Torque Taken By	Independent Suspension	Service Brakes	Shipping Weight (Lb.)
A.C.																											
Ace	6-2.56x3.94	85-4000	121.5	7.90		IH		Ch	90.0	50.0	50.0	149.0	59.5	55.0				3-SU		HS	4	Hy	3.64		FR	H	1900
2 Litre	6-2.56x3.94	70-4000	121.5	6.75		IH		Ch	117.0	55.0	56.0	164.0	67.0	61.0				3-SU		HS	4	Hy	4.55		N	H	2800
Allard																											
J2X	8-3.19x3.75	146-4000	239.5	7.00	V	IH	AA	HG	100.0	56.0	52.0	148.0	63.0	34.0	6.00-16	abc		2-Do	TP	HS	3	SB	3.27	TT	Fr	H	2816
21C	4-3.12x3.00	47-4400	92.0	6.80	IL	IH	AA	HG	100.0	51.0	50.0	156.0	66.0	51.0	6.40-13	abc		1-DD	TP	HS	3	SB	4.40	TA	Fr	H	1848
21Z	6-3.12x3.00	71-4200	136.0	7.50	IL	IH	AA	HG	100.0	51.0	50.0	156.0	66.0	51.0	6.40-13	abc		1-DD	TP	HS	3	SB	4.40	TA	Fr	H	1932
K3	8-3.06x3.75	95-3800	223.0	7.00	V	L	AA	HG	100.0	56.0	56.0	177.0	66.0	54.0	6.25-16	abc		1-DD	TP	HS	3	SB	3.90	TT	Fr	H	2600
P2	8-3.06x3.75	85-3500	223.0	6.12	V	L	AA	HG	112.0	56.0	56.0	182.0	71.0	60.0	6.25-16	abc		1-DD	TP	HS	3	SB	3.76	TT	Fr	H	3250
Alvis																											
TC21-100 (Saloon)	6-3.38x3.54	104-4000	182.0	8.00	IL	IH	AA	Ch	111.5	54.6	54.1	182.1	66.0	62.5	6.00-15	abce		2-SH	Pu	HS	4	Hy	3.77	Sp	Fr	H	3192
TC21-100 (Coupe)	6-3.38x3.54	104-4000	182.0	8.00	IL	IH	AA	Ch	111.5	54.6	54.1	182.1	66.0	61.0	6.00-15	abce		2-SH	Pu	HS	4	Hy	3.77	Sp	Fr	H	3161
Armstrong-Siddeley																											
30HP	6-3.54x3.54	125-4700	209.6	7.00	IL	IH	AA	Ch	114.0	56.6	57.5	193.0	72.0	63.0	6.70-16	abcde		1-Do	Pu	(1)	4	Hy	4.09	Sp	Fr	H	3472
30HP	6-3.54x3.54	150-5000	209.6	7.00	IL	IH	AA	Ch	114.0	56.6	57.5	193.0	72.0	63.0	6.70-16	abcde	2-Do*	Pu	(1)	4	Hy	4.09	Sp	Fr	H	3472
Aston-Martin																											
DB2-4	6-3.07x3.54	125-5000	197.4	8.15	IL	IH	AA	Ch	99.0	54.0	54.0	169.3	65.0	53.5	6.00-16	abc		2-Ho	Pu	HS	4	Hy	3.73	Sp	Fr	H	2632
DB2-4	6-3.27x3.54	140-5000	178.2	8.20	IL	IH	AA	Ch	99.0	54.0	54.0	169.3	65.0	53.5	6.00-16	abc		2-Ho	Pu	HS	4	Hy	3.73	Sp	Fr	H	2632
Austin																											
A30-7	4-2.28x3.00	28-4000	48.8	7.20	IL	IH	AA	Ch	79.5	45.3	44.8	138.4	55.1	58.3	5.20-13	abce		1-Do	Pu	HS	4	Hy	5.13	Sp	Fr	HM	1325
A135	6-3.44x4.38		244.0	6.80	IL	IH	AA	Ch	119.5	58.0	60.0	192.5	72.5	66.0	6.50-16	abce		1-Do	Pu	HS	4	Hy	4.09	Sp	Fr	H	3600
A90-6	6-3.13x3.50	85-4000	122.0	7.30	IL	IH	AA	Ch	103.0	51.5	51.3	170.3	64.0	63.0	6.40-15	abce		1-SD	Pu	HS	4	Hy	3.91	Sp	Fr	H	2600
A40	4-2.88x3.50	42-4500	73.2	7.20	IL	IH	AA	Ch	99.3	48.5	49.0	162.3	61.5	61.5	5.60-15	abce		1-Do	Pu	HS	4	Hy	4.88	Sp	Fr	H	2008
A50	4-2.88x3.50	50-4400	73.2	7.20	IL	IH	AA	Ch	99.3	48.5	49.0	162.3	61.5	61.5	5.60-15	abce		1-Do	Pu	HS	4	Hy	4.88	Sp	Fr	H	2008
Austin-Healey																											
100	4-3.44x4.38	90-4000	182.2	7.90	IL	IH	AA	Ch	90.0	49.0	50.0	151.5	60.0	49.0	5.90-15	abce		2-St	Pu	HS	4	SB	4.13	Sp	Fr	H	2176
100S	4-3.44x4.38	132-4700	182.2	8.30	IL	IH	AA	Ch	90.0	49.0	50.0	148.0	60.5	42.0	5.90-15	abce		2-St	Pu	HS	4	SB	2.92	Sp	Fr	H	1888
Bentley																											
Saloon	6-3.62x4.00		279.0	6.75	IL	F	AA	HG	120.0	56.5	56.5	200.5	70.0	66.0	6.50-16	abcde		2-SH	Pu	Au	4	Hy	3.73	Sp	Fr	HM	4170
Continental	6-3.74x4.50		7.25	IL	F	AA	HG	120.0	56.5	56.5	200.5	70.0	66.0	6.50-16	abcde		2-SH	Pu	Au	4	Hy	3.08	Sp	Fr	HM	3300
Bristol																											
403	6-2.60x3.76	100-5000	120.2	7.50	IL	IH	AA	Ch	114.0	51.7	54.0	191.7	67.0	60.0	5.75-16	abcde		3-Do	Pu	HS	4	SB	3.90	RA	Fr	H	2780
Citroen																											
2CV-A	2-2.44x2.44	9-3600	22.9	6.20	HO	IH	AA	SG	93.5	49.6	49.6	148.8	58.3	63.0	4.90-15	abce		1-SD	AC	HS	4	SB*	3.87*	Sp*	FR	H	1120
Light 15	4-2.99x3.94	66-4250	116.6	6.50	IL	IH	AA	Ch	114.5	54.0	53.3	175.0	65.3	60.0	6.50-15	abce		1-SD	Pu	HS	3	SB*	3.46*	Sp*	Fr	H	2380
Big 15	4-2.99x3.94	66-4250	116.6	6.50	IL	IH	AA	Ch	121.5	56.5	57.8	186.0	70.0	61.0	6.50-15	abce		1-SD	Pu	HS	3	SB*	3.46*	Sp*	Fr	H	2548
6 Cylinder	6-2.99x3.94	78-3600	174.0	6.50	IL	IH	AA	Ch	121.5	56.5	56.5	191.0	70.0	61.0	7.25-15	abce		1-DD	Pu	HS	3	SB*	3.87*	Sp*	Fr	H	2940
2CV-AZ	2-2.60x2.44	12-3600	25.9	6.20	HO	IH	AA	SG	93.5	49.6	49.6	148.8	58.3	63.0	4.90-15	abce		1-Do	AC	HS	4	SB	3.87	Sp	....	H	....
Daimler																											
Regency	6-3.25x4.25	107-4000	211.5	6.70	IL	IH	AA	Ch	114.0	56.0	57.0	193.0	71.0	62.5	6.50-16	abce		2-Ho	Pu	Pr	4	Hy	4.30	Sp	Fr	HM	4032
Sportsman Saloon	6-3.25x4.25	127-4000	211.5	7.59	IL	IH	AA	Ch	114.0	56.0	57.0	194.1	70.5	60.5	6.50-16	abce		2-Ho	Pu	Pr	4	Hy	4.09	Sp	Fr	HM	4144
Conquest	6-3.00x3.50	75-4000	148.4	7.00	IL	IH	AA	Ch	104.0	52.0	52.0	178.0	65.0	62.0	6.70-15	abce		1-Do	Pu	Pr	4	Hy	4.56	Sp	Fr	MH	3080
Conquest Roadster	6-3.00x3.50	100-4400	148.4	7.75	IL	IH	AA	Ch	104.0	52.0	52.0	178.0	64.0	56.0	5.00-15	abce		2-Ho	Pu	Pr	4	Hy	3.73	Sp	Fr	MH	2680
Regina	6-3.75x4.25	150-4000	282.0	6.50	IL	IH	AA	Ch	130.0	60.0	63.0	217.0	74.0	72.0	7.50-16	abce		2-Ho	Pu	Pr	4	Hy	4.27	Sp	....	H	5120
Dellow																											
MK11	4-2.50x3.64	31-4000	71.4	7.00	IL	L	AA	Ch	83.0	48.0	48.0	136.0	53.0	51.0	5.50-16	abce		1-Do	Pu	HS	3	SB	5.50	TT	N	M	1288
MKV	4-2.50x3.64	37-4400	71.4	7.00	IL	L	AA	Ch	84.0	45.0	46.0	136.0	54.0	47.0	5.50-16	abce		(2)	Pu	HS	3	SB	4.70	TT	N	M	1064
Ford																											
Zephyr Six	6-3.12x3.00	68-4200	138.0	6.80	IL	IH	AS	Ch	104.0	50.0	49.0	171.9	63.9	60.0	6.40-13	abcde		1-SD	Pu	HS	3	Hy	4.44	Sp	Fr	H	2468
Consul	4-3.12x3.00	47-4400	92.0	6.80	IL	IH	AS	Ch	100.0	50.0	49.0	166.7	64.0	60.0	5.90-13	abcde		1-SD	Pu	HS	3	Hy	4.56	Sp	Fr	H	2256
New Anglia	4-2.50x3.64	36-4500	71.0	7.00	IL	L	AS	Ch	87.0	48.0	47.5	151.3	60.0	56.0	5.20-13	abcde		1-SD	Pu	HS	3	SB	4.43	Sp	Fr	H	1623
New Prefect	4-2.50x3.64	36-4500	71.0	7.00	IL	L	AS	Ch	87.0	48.0	47.5	151.3	60.0	56.0	5.20-13	abcde		1-SD	Pu	HS	3	SB	4.43	Sp	Fr	H	1721
Popular	4-2.50x3.64	36-4000	71.0	6.16	IL	L	AA	Ch	90.0	48.0	48.0	152.3	56.5	54.3	4.50-17	abcde		1-SD	TS	HS	3	SB	5.50	TT	N	M	1907
Zephyr Zodiac	6-3.13x3.80	71-4200	138.0	7.50	IL	IH	AS	Ch	104.0	50.0	49.0	171.9	63.9	60.0	6.40-13	abcde		1-SD	Pu	HS	3	Hy	4.44	Sp	Fr	H	2522
Frazer-Nash																											
†Targa Floria Gran Sport	6-2.60x3.76	140-5750	120.2	9.00	IL	IH	AA	Ch	96.0	50.0	52.0	150.0	61.5	36.0	5.50-16	abcde		3-Do	Pu	HS	4	SB	3.90	RA	Fr	H	1680
†Targa Floria Turismo	6-2.60x3.76	100-5000	120.7	7.50	IL	IH	AA	Ch	96.0	50.0	52.0	150.0	61.5	36.0	5.50-16	abcde		3-Do	Pu	HS	4	SB	3.90	RA	Fr	H	1680
†Competition Mark II	6-2.60x3.76	140-5750	120.2	9.00	IL	IH	AA	Ch	96.0	50.0	54.0	141.0	63.5	36.0	5.50-16	abcde		3-Do	Pu	HS	4	SB	3.90	RA	FR	H	1400
†Mille Miglia	6-2.60x3.76	140-5750	120.2	9.00	IL	IH	AA	Ch	96.0	50.0	52.0	150.0	61.5	36.0	5.50-16	abcde		3-Do	Pu	HS	4	SB	3.90	RA	Fr	H	1764
Fixed Head Coupe	6-2.60x3.76	140-5750	120.2	9.00	IL	IH	AA	Ch	96.0	50.0	52.0	156.0	61.5	51.0	5.50-16	abcde		3-Do	Pu	HS	4	SB	3.90	RA	Fr	H	1850
Sebring	6-2.60x3.76	140-5750	120.2	9.00	IL	IH	AA	Ch	96.0	50.0	52.0	156.0	61.5	51.0	5.50-16	abcde		3-Do	Pu	HS	4	SB	3.90	RA	Fr	H	1690
Hillman																											
Minx Special Saloon	4-2.56x3.74	42-4200	77.2	6.63	IL	L	AA	Ch	93.0	48.0	48.5	162.5	62.5	61.0	5.00-15	abce		1-Do	Pu	HS	4	SB	5.22	Sp	Fr	H	2053
Husky	4-2.56x3.74	35-4100	77.2	6.63	IL	L	AA	Ch	94.0	48.0	48.5	148.5	62.0	61.0	5.00-15	abce		1-Do	Pu	HS	4	SB	4.78	Sp	Fr	H	1904
MKVIII Convertible	6-3.00x3.00	47-4400	85.0	7.00	IL	IH	AA	Ch	93.0	48.0	48.5	162.5	63.5	60.0	5.00-15	abce		1-Do	Pu	HS	4	SB	4.78	Sp	Fr	H	2128
MKVIII Californian	6-3.00x3.00	47-4400	85.0	7.00	IL	IH	AA	Ch	93.0	48.0	48.5	162.5	63.5	60.0	5.00-15	abce		1-Do	Pu	HS	4	SB	4.78	Sp	Fr	H	2196
MKVIII Sedan	6-3.00x3.00	47-4400	85.0	7.00	IL	IH	AA	Ch	93.0	48.0	48.5	162.5	63.5	61.0	5.00-15	abce		1-Do	Pu	HS	4	SB	4.78	Sp	Fr	H	2180
Humber																											
Hawk VI	4-3.19x4.33	70-4000	138.2	7.00	IL	IH	AA	Ch	105.5	56.0	57.0	181.5	72.0	64.5	6.40-15	abce		1-Do	Pu	HS	4	Hy	4.55	Sp	Fr	H	2980
Super Snipe	6-3.50x4.37	116-3800	252.0	7.13	IL	IH	AA	Ch	118.7	57.9	56.2	197.0	73.5	66.0	7.00-16	abcde		1-Do	Pu	HS	4	Hy	3.90	Sp	Fr	H	3873
Jaguar																											
MKVIIIM	6-3.27x4.17	190-5500	210.0	8.00	IL	IH	AT	Ch	120.0	56.5	59.0	196.5	73.0	63.0	6.70-16	abcde		2-SH	TP	HS	4	Hy	4.27	Sp	Fr	H	3780
XK140 Sports	6-3.27x4.17	190-5500	210.0	8.00	IL	IH	AT	Ch	102.0	51.5	50.5	176.0	64.5	53.5	6.00-16	abcde		2-SH	TP	HS	4	Hy	3.54	Sp	Fr	H	2770
XK140 Sports SE	6-3.27x4.17	210-5750	210.0	8.00	IL	IH	AT	Ch	102.0	51.5	51.4	176.0	64.5	53.5	6.00-16	abcde		2-SH	TP	HS	4	Hy	3.54	Sp	Fr	H	2770
XK140 DH Coupe	6-3.27x4.17	210-5750	210.0	8.00	IL	IH	AT	Ch	102.0	51.5	50.5	176.0	64.5	56.0	6.00-16	abcde		2-SH	TP	HS	4	Hy	3.54	Sp	Fr	H	3000
XK140DH Coupe SE	6-3.27x4.17	210-5750	210.0	8.00	IL	IH	AT	Ch	102.0	51.5	51.4	176.0	64.5	56.0	6.00-16	abcde		2-SH	TP	HS	4	Hy	3.54	Sp	Fr	H	3000
XK140 FH Coupe	6-3.27x4.17	210-5750	210.0	8.00	IL	IH	AT	Ch	102.0	51.5	50.5	176.0	64.5	56.0	6.00-16	abcde		2-SH	TP	HS	4	Hy	3.54	Sp	Fr	H	2980
XK140 FH Coupe SE	6-3.27x4.17	210-5750	210.0	8.00	IL	IH	AT	Ch	102.0	51.5	51.4	176.0	64.0	56.0	6.00-16	abcde		2-SH	TP	HS	4	Hy	3.54	Sp	Fr	H	2980
Jensen																											
Interceptor	6-3.81x4.37	130-4000	243.0	6.80	IL	IH	AA	Ch	112.0	54.0	57.0	188.0	66.0	58.0	6.00-16	abce		1-Do	Pu	HS	3	Hy	4.09	Sp	Fr	H	2800
541	6-3.81x4.37	130-3800	243.4	6.80	IL	IH	AA	Ch	105.0	52.0	52.0	174.0	63.0	53.0	6.00-16	abce		1-Do	TP	HS	4	Hy	3.31	Sp	Fr	H	2500
Lagonda																											
3 Litre	6-3.27x3.54	140-5000	178.2	8.20	IL	IH	AA	Ch	113.5	56.0	56.0	196.0	69.5	62.0	6.00-16	abc		2-Ho	Pu	HS	4	Hy	4.56	TT	FR	H	3558
3 Litre (4 door)	6-3.27x3.54	140-5000	178.2	8.20	IL	IH	AA	Ch	113.5	56.0	56.0	196.0	69.5	62.0	6.00-16	abc		2-St	Pu	HS	4	Hy	4.56	TT	FR	H	3694

For abbreviations, see page 145

For Directory of Car Manufacturers listed above, see page 263

OTHER FOREIGN CARS

MAKE AND MODEL	ENGINE: Number of Cylinders, Bore and Stroke (In.)	Maximum Brake Hp. at Specified R.P.M.	Piston Displacement (Cu In.)	Compression Ratio (To -1)	Cylinder Arrangement	Valve Location	Piston Material	Camshaft Drive	GENERAL DATA: Wheelbase (In.)	Tread: Front (In.)	Tread: Rear (In.)	Overall Dimensions (In.): Length Including Bumper and Bumper Guards	Overall Dimensions (In.): Width	Overall Dimensions (In.): Height — Road to Roof, No Load	Tires (In.)	Oil Pressure to —	Carburetors — No. Used and Type	Cooling System	Shifting Method	No. of Forward Speeds	REAR AXLE: Final Drive Type	REAR AXLE: Gear Ratio (To -1)	REAR AXLE: Torque Taken By	Independent Suspension	Service Brakes	Shipping Weight (Lb.)
BRITISH—*continued*																										
Lanchester ..... Sprite	4-3.00x3.80	60-4200	88.9	7.00	IL	IH	AA	Ch	100.0	51.0	51.0	170.0	64.0	60.0	5.60/15	abce	1-Do	Pu	Au	4	Hy	4.44	Sp	Fr	H	2290
Lea-Francis ..... 14 HP	4-3.35x4.33	95-4000	163.0	7.25	IL	IH	AA	Ch	111.0	52.1	52.4	184.0	64.0	60.5	6.00/16	abce	1-St	Pu	HS	4	Hy	3.91	Sp	Fr	H	3024
..... 2½ Litre	4-3.35x4.33	125-5000	163.0	9.00	IL	IH	AA	Ch	99.0	52.1	52.4	160.0	62.0	52.0	6.00/16	abce	2-St	Pu	HS	4	Hy	3.64	Sp	Fr	H	2575
..... 14 HP	4-2.95x3.94	70-4700	108.0	7.25	IL	IH	AA	Ch	111.0	52.1	52.4	184.0	64.0	60.5	6.00/16	abce	1-St	Pu	HS	4	Hy	4.08	Sp	Fr	H	2839
..... 14 HP Estate Car	4-2.95x3.94	65-4700	108.0	7.25	IL	IH	AA	Ch	111.0	52.1	52.4	184.0	64.0	64.0	6.00/16	abce	1-St	Pu	HS	4	Hy	4.08	Sp	Fr	H	2879
MG ..... TF	4-2.63x3.54	63-5000	89.4	8.40	IL	IH	AA	Ch	94.0	47.4	50.0	147.0	58.0	52.5	5.50/15	abce	2-He	Pu	HS	4	Hy	4.88	Sp	Fr	H	1904
..... Magnette	4-2.60x3.50	68-4800	90.8	7.15	IL	IH	AA	Ch	102.0	51.0	51.0	169.0	63.0	58.0	5.50/15	abce	2-SD	Pu	HS	4	Hy	4.88	Sp	Fr	H	2464
Morgan ..... Plus 4	4-3.35x3.62	68-4200	127.6	6.70	IL	IH	AA	Ch	96.0	47.0	47.0	144.0	56.0	52.5	5.25/16	abcde	1-De	Pu	HS	4	Hy	4.10	Sp	Fr	H	1700
..... Plus 4TR	4-3.27x3.62	90-4800	121.5	8.50	IL	IH	AA	Ch	96.0	47.0	47.0	144.0	56.0	52.5	5.25/16	abcde	2-St	Pu	HS	4	Hy	3.72	Sp	Fr	H	1700
Morris ..... Oxford Series II	4-2.68x3.50	50-4200	90.9	7.43	IL	IH	AA	Ch	97.0	53.5	53.0	171.0	65.0	63.0	5.50/15	abce	1-SD	Pu	HS	4	Hy	4.88	Sp	Fr	H	2348
..... Minor Series II	4-2.68x3.00	30-4800	48.0	7.20	IL	IH	AT	Ch	86.0	50.0	50.3	148.0	61.1	60.0	5.00/14	abce	1-SH	Pu	HS	4	Hy	5.38	Sp	Fr	H	1723
..... Cowley	4-2.56x2.50	42-4500	73.2	7.09	IL	IH	AA	Ch	97.0	53.5	53.0	171.0	65.0	63.0	5.60/15	abce	1-De	Pu	HS	4	Hy	5.13	Sp	Fr	H	2296
Riley ..... 1½ Litre	4-2.72x3.94	55-4500	91.3	6.80	IL	IH	AA	Ch	112.5	52.2	52.2	179.0	63.5	59.0	5.75/16	abce	1-He	Pu	HS	4	SB	4.89	Sp	Fr	H	2985
..... Pathfinder	4-3.17x4.73	110-4500	149.0	7.20	IL	IH	AA	Ch	113.5	54.0	54.5	185.0	67.0	60.0	6.00/16	abce	2-SD	Pu	HS	4	Hy	4.10	TA	Fr	H	3412
Rolls-Royce Silver Dawn	6-3.62x4.50	.....	279.0	6.75	IL	F	AA	HG	120.0	56.5	58.5	203.5	70.0	66.7	6.50/16	abcde	1-DD	Pu	HS	4	Hy	3.73	Sp	Fr	HM	4139
..... Silver Wraith	6-3.62x4.50	.....	279.0	6.40	IL	F	AA	HG	127.0	58.5	60.5	208.0	73.0	67.5	7.50/16	abcde	1-SD	Pu	Au	4	Hy	4.25	Sp	Fr	HM	.....
..... Silver Wraith	6-3.62x4.50	.....	279.0	6.40	IL	F	AA	HG	133.0	58.5	60.5	208.0	73.0	67.5	7.50/16	abcde	1-SD	Pu	Au	4	Hy	4.25	Sp	Fr	HM	.....
Rover 75	6-2.88x3.98	80-4500	136.0	6.95	IL	F	AA	Ch	111.0	52.0	51.5	178.2	65.5	63.7	6.00/15	abce	1-SH	Pu	HS	4	SB	4.30	Sp	Fr	H	3149
..... 60	4-3.06x4.13	60-4000	121.8	6.70	IL	F	AA	Ch	111.0	52.0	51.5	178.2	65.5	63.7	6.00/15	abce	1-SH	Pu	HS	4	SB	4.30	Sp	Fr	H	3002
..... 90	6-2.88x4.13	90-4500	160.9	6.73	IL	F	AA	Ch	111.0	52.0	51.5	178.2	65.5	63.7	6.00/15	abce	1-SH	Pu	HS	4	SB	4.30	Sp	Fr	H	3149
Singer ..... SM Roadster	4-2.88x3.52	40-4200	91.3	7.00	IL	IH	AA	Ch	91.0	48.7	48.7	151.5	58.0	58.5	5.00/16	abc	1-SD	Pu	HS	4	SB	4.88	Sp	Fr	HM	1800
..... SM 1500	4-2.88x3.52	48-4200	91.3	7.00	IL	IH	AA	Ch	107.5	50.5	51.0	176.5	63.0	64.0	5.50/16	abc	1-SD	Pu	HS	4	Hy	5.12	Sp	Fr	H	2520
..... SM Roadster (Twin)	4-2.88x3.52	58-4800	91.3	7.47	IL	IH	AA	Ch	91.0	48.7	48.7	151.5	58.0	58.5	5.00/16	abc	2-SD	Pu	HS	4	Hy	4.44	Sp	Fr	HM	1800
..... SM 1500 (Twin)	4-2.88x3.52	58-4800	91.3	7.47	IL	IH	AA	Ch	107.5	50.5	51.0	176.5	63.0	64.0	5.50/16	abc	2-SD	Pu	HS	4	Hy	5.12	Sp	Fr	H	2520
..... Hunter Saloon	4-2.87x3.52	48-4200	91.3	7.10	IL	IH	AA	Ch	107.5	50.5	51.0	177.0	63.0	64.0	6.50/16	abc	1-De	Pu	HS	4	Hy	5.13	Sp	Fr	M	2548
..... Hunter Saloon (Twin)	4-2.87x3.52	58-4600	91.3	7.47	IL	IH	AA	Ch	107.5	50.5	51.0	177.0	63.0	64.0	5.50/16	abc	2-De	Pu	HS	4	Hy	5.13	Sp	Fr	M	2548
..... SM Roadster	4-2.87x3.52	48-4200	91.3	7.10	IL	IH	AA	Ch	91.0	48.0	48.8	156.0	58.0	58.5	5.00/16	abc	1-De	Pu	HS	4	Hy	4.88	Sp	Fr	M	1736
..... SM Roadster (Twin)	4-2.87x3.52	58-4600	91.3	7.47	IL	IH	AA	Ch	91.0	48.0	48.8	156.0	58.0	58.5	5.00/16	abc	2-De	Pu	HS	4	Hy	4.44	Sp	Fr	M	1736
Standard ..... Vanguard	4-3.35x3.62	68-4200	127.6	7.00	IL	IH	AA	Ch	94.0	51.0	54.0	167.0	69.0	64.0	6.00/16	abcde	1-SD	Pu	HS	3	Hy	4.62	Sp	Fr	H	2716
..... Eight	4-2.28x2.98	28-4500	48.0	7.00	IL	IH	AA	Ch	84.0	48.5	48.5	142.0	56.0	60.0	5.20/13	abce	1-SD	Pu	HS	4	Hy	4.86	Sp	Fr	H	1484
..... Ten	4-2.48x2.98	33-4500	57.8	7.00	IL	IH	AA	Ch	84.0	48.5	48.5	145.0	56.0	60.0	5.00/13	abc	1-De	Pu	HS	4	Hy	4.86	Sp	Fr	H	1569
Sunbeam ..... MK III	4-3.19x4.33	80-4400	138.2	7.50	IL	IH	AA	Ch	97.5	47.5	50.5	168.0	62.5	60.0	5.50/16	abce	1-De	Pu	HS	4	Hy	(3)	Sp	Fr	H	2926
..... Alpine	4-3.19x4.33	80-4400	138.2	7.50	IL	IH	AA	Ch	97.5	47.5	50.5	168.3	62.5	57.0	5.50/16	abce	1-De	Pu	HS	4	Hy	(3)	Sp	Fr	H	2861
Swallow ..... Mark I	4-3.27x3.62	90-4800	121.5	8.50	IL	IH	AA	Ch	95.0	48.0	48.5	150.0	61.0	60.5	5.50/15	abc	2-SD	Pu	HS	4	Hy	3.70	TaS	Fr	H	2030
Triumph ..... Renown	4-3.36x3.62	68-4200	127.6	7.00	IL	IH	AA	Ch	111.0	51.0	54.0	181.0	64.0	65.0	5.75/16	abcde	1-SD	Pu	HS	3	Hy	4.62	Sp	Fr	H	2835
..... Sports	4-3.29x3.62	90-4800	121.5	8.50	IL	IH	AA	Ch	86.0	45.0	46.0	151.0	56.5	50.0	5.50/15	abcde	2-He	Pu	HS	4	Hy	3.70	Sp	Fr	H	1991
Vauxhall ..... Wyvern	4-3.13x3.00	40-4000	92.0	6.90	IL	IH	AA	Ch	103.0	53.2	54.5	170.8	66.0	63.5	5.60/15	abce	1-De	Pu	HS	3	Hy	4.62	Sp	Fr	H	2265
..... Wyvern	4-3.13x3.00	48-4000	92.0	7.30	IL	IH	AA	Ch	103.0	53.2	54.5	170.8	66.0	63.5	5.60/15	abce	1-De	Pu	HS	3	Hy	4.62	Sp	Fr	H	2265
..... Velox	4-3.13x3.00	68-4000	138.0	6.50	IL	IH	AA	Ch	103.0	53.2	54.5	172.1	66.0	63.5	5.60/15	abce	1-De	Pu	HS	3	Hy	4.12	Sp	Fr	H	2280
..... Velox	4-3.13x3.00	68-4000	138.0	7.30	IL	IH	AA	Ch	103.0	53.2	54.5	172.1	66.0	63.5	5.90/15	abce	1-De	Pu	HS	3	Hy	4.12	Sp	Fr	H	2280
..... Cresta	4-3.13x3.00	68-4000	138.0	6.50	IL	IH	AA	Ch	103.0	53.2	54.5	172.1	66.0	63.5	5.90/15	abce	1-De	Pu	HS	3	Hy	4.12	Sp	Fr	H	2436
..... Cresta	4-3.13x3.00	68-4000	138.0	7.30	IL	IH	AA	Ch	103.0	53.2	54.5	172.1	66.0	63.5	5.90/15	abce	1-De	Pu	HS	3	Hy	4.12	Sp	Fr	H	2436
Wolseley 4-44	4-2.62x3.54	NA	76.3	7.32	IL	IH	AA	Ch	102.0	50.7	51.0	173.0	61.0	60.0	5.50/15	abce	1-He	Pu	HS	4	Hy	5.13	Sp	Fr	H	2920
..... 6-90	6-3.13x3.50	95-4500	161.0	7.20	IL	IH	AA	Ch	113.5	54.4	54.5	184.0	63.0	62.0	6.00/15	abce	2-SD	Pu	HS	4	Hy	4.00	TA	Fr	H	3360
ARGENTINA																										
I.A.M.E. 1-700	2-2.99x2.99	23-4200	42.0	6.40	IL	SS	AA	.....	106.3	47.2	49.2	168.9	58.9	57.1	5.50/16	.....	1-SD	TS	HS	3	HQ	3.26	TA	FR	H	1674
..... M-800	4-2.28x2.99	35-4500	48.8	7.00	.....	.....	AA	N	106.3	47.2	49.2	168.9	58.9	57.1	5.00/16	.....	1-SD	Pu	HS	3	HQ	2.86	TA	FR	H	2072
..... 1500	4-3.15x2.91	55-4400	90.8	7.00	HO	IH	AA	HG	94.5	49.2	49.2	163.4	61.0	59.3	5.50/16	abc	2-SD	AC	HS	4	Hy	4.38	TA	FR	H	2960
AUSTRALIA																										
Holden ..... Standard FJ-215	6-3.00x3.12	60-3800	132.6	6.50	IL	IH	AA	HG	103.0	53.0	54.0	173.3	65.0	64.0	5.50/15	abce	1-SD	Pu	HS	3	SbH	3.89	Sp	Fr	H	2154
..... Business FJ-217	6-3.00x3.12	60-3800	132.6	6.50	IL	IH	AA	HG	103.0	53.0	54.0	173.3	65.0	63.0	5.50/15	abce	1-SD	Pu	HS	3	SbH	3.89	Sp	Fr	H	2199
..... Special FJ-225	6-3.00x3.12	60-3800	132.6	6.50	IL	IH	AA	HG	103.0	53.0	54.0	173.3	65.0	64.0	5.90/15	abce	1-SD	Pu	HS	3	SbH	3.89	Sp	Fr	H	2177
AUSTRIA																										
Denzel ..... Sports	4-3.04x2.61	52-5400	76.7	7.70	HO	IH	.....	.....	82.7	51.1	51.1	.....	.....	33.4	5.25/16	.....	2-	AC	.....	4	.....	4.38	.....	FR	H	1320
..... Super Sports	4-3.04x2.61	65-5800	76.7	9.20	HO	IH	.....	.....	82.7	51.1	51.1	.....	.....	33.4	5.25/16	.....	2-Dt	AC	.....	4	.....	4.38	.....	FR	H	1320
Steyr-Daimler-Puch WB40SA	4-3.39x3.46	70-4000	121.8	7.00	IL	IH	AA	Ch	104.3	52.4	52.0	171.0	65.0	60.0	6.40/14	abce	1-SD	Pu	Pr	5	Hy	4.63	Sp	Fr	H	2535
..... WB40SB	4-3.39x3.46	70-4000	121.8	7.00	IL	IH	AA	Ch	104.3	53.4	53.1	171.0	65.0	59.5	(4)	abce	1-SD	Pu	Pr	4	Hy	4.30	Sp	Fr	H	2337
CZECHOSLOVAKIA																										
Motokov ..... Skoda 1200	4-2.83x2.95	35-4800	74.8	6.80	IL	IH	AA	Ch	105.7	49.2	52.0	177.2	65.9	59.0	6.00/15	abce	1-HU	Pu	HS	4	SB	5.25	TT	FR	H	2293
..... Tatraplan T600	4-3.35x3.39	52-4000	119.0	8.00	HO	IH	AA	HG	106.3	51.2	51.2	170.7	65.0	59.0	6.00/16	abce	2-De	AC	HS	4	SB	4.09	.....	FR	H	2556

For abbreviations, see page 145

For Directory of Car Manufacturers listed above, see page 262

OTHER FOREIGN CARS—*continued*

MAKE AND MODEL	ENGINE: Number of Cylinders, Bore and Stroke (In.)	ENGINE: Maximum Brake Hp. at Specified R.P.M.	ENGINE: Piston Displacement (Cu In.)	ENGINE: Compression Ratio (To -1)	ENGINE: Cylinder Arrangement	ENGINE: Valve Location	ENGINE: Piston Material	ENGINE: Camshaft Drive	GENERAL DATA: Wheelbase (In.)	GENERAL DATA: Tread Front (In.)	GENERAL DATA: Tread Rear (In.)	GENERAL DATA: Overall Dimensions (In.) Length Including Bumper and Bumper Guards	GENERAL DATA: Overall Dimensions (In.) Width	GENERAL DATA: Overall Dimensions (In.) Height—Road to Roof, No Load	GENERAL DATA: Tires (In.)	GENERAL DATA: Oil Pressure to—	GENERAL DATA: Carburetors—No. Used and Type	GENERAL DATA: Cooling System	GENERAL DATA: Shifting Method	GENERAL DATA: No. of Forward Speeds	REAR AXLE: Final Drive Type	REAR AXLE: Gear Ratio (To -1)	REAR AXLE: Torque Taken By	Independent Suspension	Service Brakes	Shipping Weight (Lb.)
FRANCE																											
Bugatti 101	8-2.83x3.94	200-5500	198.7	6.50	IL	IH	AA	HG	129.9	53.1	53.1	212.6	65.0	65.0	6.00/17	abcde	1-DD	Pu	HS	4	SB	.....	TA	N	H	....
Citroen 11CV Legere	4-3.07x3.94	58-4000	116.6	6.50	IL	IH	AA	Ch	114.6	54.1	53.3	175.2	65.7	60.6	6.50/15	abc	1-De	Pu	HS	3	SB	3.44	Sp	Fr	H	3067
11CV Normale	4-3.07x3.94	58-4000	116.6	6.50	IL	IH	AA	Ch	121.7	56.8	57.9	183.1	70.5	60.6	6.50/15	c	1-De	Pu	HS	3	SB	3.44	Sp	Fr	H	3418
15CV Six	6-3.07x3.94	78-3500	174.9	6.50	IL	IH	AA	HG	121.7	56.8	56.8	187.4	70.5	60.6	7.25/15	c	1-DD	Pu	HS	3	SB	3.88	Sp	FR	H	3969
2CVA	2-2.44x2.44	9-3500	22.9	6.20	HO	IH	AA	HG	94.4	49.6	49.6	148.8	58.3	63.0	4.90/15	c	1-Do	AC	HS	4	SB	3.88	Sp	FR	H	1764
11 Familiale	4-3.07x3.94	58-4000	116.6	6.50	IL	IH	AA	Ch	128.9	56.8	57.9	190.0	70.5	62.2	7.25/15	c	1-Do	Pu	HS	3	SB	3.88	Sp	Fr	H	4300
15 Familiale	6-3.07x3.94	78-3500	174.9	6.50	IL	IH	AA	Ch	128.9	56.8	56.8	194.8	70.5	62.2	7.25/15	c	1-DD	Pu	HS	3	SB	3.88	Sp	Fr	H	4740
2CVAZ	2-2.60x2.44	12-3500	25.9	6.20	HO	IH	AA	HG	94.5	49.6	49.6	148.8	58.3	63.0	4.90/15	abcd	1-SD	AC	HS	4	SB	4.43	Sp	FR	H	1091
Hotchkiss LA13CV	4-3.39x3.92	.....	141.9	.....	.....	.....	.....	.....	115.2	57.1	56.6	190.6	70.9	.....	6.40/16	.....	.....	.....	HS	3	SG	.....	.....	Fr	.....	....
LA20CV	6-3.39x3.94	.....	212.9	.....	.....	.....	.....	.....	115.2	57.1	56.6	190.6	70.9	.....	6.40/16	.....	.....	.....	HS	3	SG	.....	.....	Fr	.....	....
Panhard Junior	2-1.78x2.85	42-5000	14.2	7.25	HO	.....	AA	.....	83.9	44.7	44.7	145.7	59.1	51.2	5.70/15	.....	1-DD	AC	HS	4	.....	.....	.....	FR	H	....
Dyna 54	2-1.78x2.85	42-5000	14.2	7.25	HO	IH	AA	.....	101.4	51.2	51.2	179.9	63.0	57.1	5.70/15	.....	1-DD	AC	HS	4	.....	.....	.....	FR	H	....
Peugeot 203	4-2.96x2.88	45-4500	78.7	6.97	IL	IH	AA	Ch	101.5	52.0	52.0	171.2	63.5	61.5	6.00/16	.....	1-Do	Pu	HS	4	We	5.75	TT	Fr	H	1980
Renault R1062	4-2.15x3.15	21-4100	45.6	7.25	IL	IH	AS	HG	82.7	46.0	46.0	142.9	56.3	57.9	5.00/15	abce	1-De	Pu	HS	3	SB	4.71	.....	FR	H	1213
R1100	4-3.36x3.46	62-3900	121.0	7.00	IL	IH	AS	HG	110.2	55.1	55.1	185.0	67.7	63.0	6.40/15	abce	1-De	Pu	HS	4	SB	4.86	TA	FR	H	2816
Rovin 3CVCD4	2-2.76x2.36	13-3200	28.2	.....	HO	.....	.....	.....	70.9	38.6	38.6	154.0	45.3	39.2	3.50/10	.....	1-SU	.....	HS	3	.....	.....	Sp	N	M	....
Salmson 2300S	4-3.31x4.13	110-5000	140.3	7.50	IL	IH	AA	HG	105.7	53.9	53.5	173.6	65.7	56.9	6.25/25	abe	1-Dt	Pu	HS	4	SB	3.62	.....	Fr	.....	....
Simca 1200XB	4-2.83x2.95	45-4800	74.5	6.75	IL	IH	AA	Ch	98.1	48.4	49.2	160.0	61.0	57.0	5.60/14	abc	1-SD	Pu	HS	4	Hy	4.44	Sp	Fr	H	2009
1200XS	4-2.83x2.95	51-4800	74.5	7.85	IL	IH	AA	Ch	98.0	49.4	49.2	167.0	62.0	56.0	5.60/14	abc	1-SD	Pu	HS	4	Hy	4.44	Sp	Fr	H	2030
FS2A Vendetta 55	6-2.60x3.39	80-4600	143.5	7.20	V	L	.....	.....	106.0	54.0	53.0	179.0	69.1	58.3	6.40/13	.....	.....	.....	HS	3	Hy	3.90	.....	.....	.....	3626
Talbot Grand Sport	6-3.66x4.33	210-4800	273.4	8.00	IL	IH	AS	Ch	114.2	56.9	56.9	.....	.....	.....	6.00/16	abcde	3-De	Pu	Pr	4	SB	3.38	Sp	Fr	H	3527
Lago Record	6-3.66x4.33	170-4200	273.4	7.00	IL	IH	AS	Ch	123.0	56.9	56.5	.....	.....	.....	6.00/16	abcde	3-De	Pu	Pr	4	SB	3.58	Sp	Fr	H	3868
GERMANY																											
Auto Union AU900	3-2.60x2.99	34-4000	54.7	6.50	IL	N	AA	.....	92.5	46.9	49.2	169.3	63.0	67.1	5.60/15	.....	.....	1-SD	TS	HS	4	Hy	4.72	Sp	Fr	H	2778
BMW 501	6-2.60x3.78	72-4400	120.3	6.80	IL	.....	AA	Ch	111.0	52.9	56.3	186.2	69.1	60.2	5.50/16	abcde	1-DD	Pu	HS	4	Hy	4.23	TA	Fr	H	2830
502	8-2.91x2.95	105-4800	157.4	6.90	V	.....	AA	Ch	111.0	52.9	56.3	186.2	69.1	60.2	5.50/16	abcde	1-DD	Pu	HS	4	Hy	4.23	TA	Fr	H	3055
Borgward Hansa 2400	6-3.07x3.21	82-4500	142.6	6.90	IL	IH	AA	HG	103.1	53.5	55.9	175.6	70.1	58.7	6.40/15	.....	1-DD	Pu	HA	4	Hy	3.90	.....	FR	H	3088
Hansa 1800 Diesel	4-3.07x3.62	42-3400	107.2	19.80	IL	IH	AA	HG	102.4	49.2	51.2	175.3	63.0	61.4	6.40/15	abc	Inj	Pu	HS	4	Hy	4.22	Sp	FR	H	2988
Hansa 2400 Pullman	6-3.07x3.21	82-4500	142.6	6.90	IL	IH	AA	HG	111.0	53.5	56.0	183.0	70.1	58.0	6.70/15	.....	1-DD	Pu	HA	4	Hy	3.90	.....	FR	H	3316
Isabella	4-2.60x3.33	60-4700	91.1	6.80	IL	IH	AA	HG	102.4	52.5	53.5	172.8	67.1	57.7	5.90/13	abcd	1-DS	Pu	HS	4	Hy	3.90	Sp	FR	H	....
EMW F9	3-2.76x3.07	32-3900	54.9	6.80	IL	.....	AA	SG	92.5	46.9	49.0	165.4	63.0	57.1	5.00/16	b	1-St	TS	HS	4	Hy	.....	Sp	Fr	H	1962
340-2	6-2.60x3.78	55-3750	175.1	8.10	IL	IH	AA	Ch	113.0	51.2	56.1	181.1	68.1	64.2	5.50/16	b	1-De	Pu	HS	4	Hy	.....	TaS	FR	H	2756
327-2	6-2.60x3.78	57-3750	175.1	8.10	IL	IH	AA	Ch	109.3	51.2	51.2	177.2	63.0	57.1	5.50/16	b	1-De	Pu	HS	4	Hy	.....	Sp	Fr	H	2491
Ford Taunus 12M	4-2.50x3.64	38-4250	71.5	6.80	IL	L	AS	HG	98.0	48.0	48.0	169.4	62.2	61.0	5.90/13	abc	1-De	Pu	HS	3	SB	4.37	Sp	Fr	H	1818
Taunus 12	4-2.50x3.64	38-4250	71.5	6.80	IL	L	AS	HG	98.0	48.0	48.0	169.4	62.2	61.0	5.90/13	abc	1-De	Pu	HS	3	SB	4.37	Sp	Fr	H	1750
Goliath GP700	2-2.91x3.15	26-4000	42.0	6.40	IL	.....	AA	SG	90.6	49.5	49.5	163.4	63.0	57.1	5.60/15	.....	.....	1-De	TS	HS	4	HG	.....	Sp	Fr	H	1913
GP700E	2-3.01x3.15	29-4000	42.0	7.70	IL	.....	AA	N	90.6	49.2	49.2	168.7	62.2	66.0	5.60/15	.....	.....	Inj	Pu	HS	4	.....	.....	Sp	Fr	H	1918
Lloyd LP400S, LS400S	2-2.44x2.52	13-3250	23.5	6.85	IL	N	AA	N	78.7	41.3	43.3	138.8	58.3	55.1	4.25/15	N	1-St	AC	HS	3	StB	4.82	Sp	FR	H	1003
LT500/PKW	2-2.44x2.52	13-3250	23.5	6.85	IL	N	AA	N	92.5	47.2	47.2	138.8	57.1	63.0	5.00/15	N	1-St	AC	HS	3	StB	5.22	Sp	FR	H	1312
Mercedes-Benz 170SV	4-2.95x2.94	50-3500	107.8	6.70	IL	L	AA	Ch	112.0	51.6	50.7	175.3	66.3	62.7	5.50/16	abcde	1-SU	Pu	HS	4	Hy	4.11	Rah	Fr	H	2530
170SD	4-2.95x2.94	43-3200	107.8	19.00	IL	.....	AA	SQ	112.0	51.6	56.7	175.3	66.3	62.7	5.50/16	abcde	.....	Pu	HS	4	Hy	4.11	Rah	Fr	H	2640
180	4-2.95x2.94	58-4000	107.8	6.70	IL	L	AA	Ch	104.3	56.0	57.2	175.5	66.6	61.3	6.40/13	abcde	1-SD	Pu	HS	4	Hy	3.89	TA	Fr	H	2360
180D	4-2.95x3.94	43-3200	107.8	19.00	IL	.....	AA	SQ	104.3	56.0	57.2	175.5	66.6	61.3	6.40/13	abcde	.....	Pu	HS	4	Hy	3.70	TA	Fr	H	2470
220A	6-3.16x2.96	82-4800	134.0	7.60	IL	.....	AA	Ch	111.0	56.3	57.9	186.5	68.6	61.5	6.70/13	abcde	1-DD	Pu	HS	4	Hy	4.11	TA	Fr	H	2900
300S	6-3.34x3.47	136-4500	182.8	7.50	IL	.....	AA	Ch	120.0	59.3	60.6	190.0	72.4	63.0	7.10/15	abcde	2-SD	Pu	HS	4	Hy	4.67	Rah	Fr	H	3668
300S	6-3.34x3.47	163-5000	182.8	7.60	IL	.....	AA	Ch	114.2	58.3	60.0	186.5	75.3	59.5	6.70/15	abcde	3-SD	Pu	HS	4	Hy	4.13	Rah	Fr	H	3620
300SL	6-3.34x3.47	240-6100	182.8	8.55	IL	.....	AA	Ch	94.5	54.5	56.5	170.9	70.5	51.3	6.50/15	abcde	.....	Pu	HS	4	Hy	3.64	Rah	Fr	H	2560
Opel Rekord, Olympia	4-3.15x2.91	50-4200	90.8	7.00	IL	IH	AS	HG	97.9	47.2	49.9	166.9	64.0	61.0	5.00/13	abcde	1-De	Pu	HS	3	Hy	3.90	Sp	Fr	H	1997
Car-A-Van	4-3.15x2.91	50-4200	90.8	7.00	IL	IH	AS	HG	97.9	47.4	49.0	167.7	64.0	62.2	6.40/13	abcde	1-De	.....	HS	3	Hy	4.22	Sp	Fr	H	2083
Kapitan	6-3.15x3.23	70-3800	150.9	7.00	IL	IH	AS	HG	108.3	52.8	54.0	186.4	69.3	62.2	6.40/13	abcd	1-De	Pu	HS	3	Hy	3.90	Sp	Fr	.....	2568
Porsche 356/1100	4-2.69x2.52	40-4000	66.2	7.00	HO	IH	AA	HG	82.7	50.8	49.2	155.6	65.5	51.2	5.00/16	abce	2-De	AC	HS	4	SB	4.38	TA	FR	H	1830
356/1300 Super	4-2.94x2.91	60-5500	78.7	8.20	HO	IH	AA	HG	82.7	50.8	49.2	155.6	65.5	51.2	5.00/16	abce	2-De	AC	HS	4	SB	4.38	TA	FR	H	1830
356/1500	4-3.15x2.91	55-4400	90.8	7.00	HO	IH	AA	HG	82.7	50.8	49.2	155.6	65.5	51.2	5.00/16	abce	2-De	AC	HS	4	SB	4.38	TA	FR	H	1830
356/1500 Super	4-3.15x2.91	70-5000	90.8	8.20	HO	IH	AA	HG	82.7	50.8	49.2	155.6	65.5	51.2	5.00/16	abce	2-De	AC	HS	4	SB	4.38	TA	FR	H	1830
356/1300 A	4-2.94x2.91	44-4200	78.7	6.50	HO	IH	AA	HG	82.7	50.8	49.2	155.6	65.5	51.2	5.00/16	abce	2-De	AC	HS	4	SB	4.38	TA	FR	H	1830
Volkswagen 1/11	4-3.03x2.82	30-3400	72.7	6.60	HO	IH	AS	HG	94.5	50.8	49.2	160.2	66.6	59.1	5.00/15	abc	1-SD	AC	HS	4	SB	4.40	TA	FR	*	1520
2/22	4-3.03x2.82	30-3400	72.7	6.60	HO	IH	AS	HG	94.5	53.4	53.5	165.0	66.6	74.0	5.50/16	abc	1-SD	AC	HS	4	SDR	6.20	TA	FR	H	2330
ITALY																											
Alfa-Romeo 1900 AR 52	4-3.23x3.46	85-4400	114.9	7.00	IL	IH	AA	Ch	98.0	51.1	51.1	138.5	59.2	71.9	6.40/16	abce	1-SD	Pu	HS	8	SB	4.10	Sp	Fr	H	2870
Giulietta Sprint	4-2.98x2.95	65-6000	79.7	8.00	IL	IH	AA	Ch	93.7	50.0	50.0	153.5	60.6	51.2	6.10/15	abcde	1-DD	Pu	HS	4	Hy	4.55	TT	Fr	H	1764
1900 Super	4-3.33x3.46	90-5200	120.5	7.50	IL	IH	AA	Ch	103.5	52.0	52.0	174.8	63.0	58.7	6.50/15	abcde	1-SU	Pu	HS	4	Hy	4.10	TT	Fr	H	2513
1900 C Super Sprint	4-3.33x3.46	115-5500	120.5	8.00	IL	IH	AA	Ch	98.4	51.3	51.3	176.2	63.4	52.2	6.50/15	abcde	2-DD	Pu	HS	5	Hy	4.55	TT	Fr	H	2206
1900 TI Super	4-3.33x3.46	115-5500	120.5	8.00	IL	IH	AA	Ch	103.5	52.0	52.0	174.8	63.0	58.7	6.50/15	abcde	2-DD	Pu	HS	4	Hy	4.10	TT	Fr	H	2513

For abbreviations, see page 145

For Directory of Car Manufacturers listed above, see page 263

OTHER FOREIGN CARS—*concluded*

MAKE AND MODEL	ENGINE: Number of Cylinders, Bore and Stroke (In.)	ENGINE: Maximum Brake Hp. at Specified R.P.M.	ENGINE: Piston Displacement (Cu. In.)	ENGINE: Compression Ratio (To -1)	ENGINE: Cylinder Arrangement	ENGINE: Valve Location	ENGINE: Piston Material	ENGINE: Camshaft Drive	GENERAL DATA: Wheelbase (In.)	GENERAL DATA: TREAD: Front (In.)	GENERAL DATA: TREAD: Rear (In.)	GENERAL DATA: OVERALL DIMENSIONS (In.): Length Including Bumpers and Bumper Guards	GENERAL DATA: OVERALL DIMENSIONS (In.): Width	GENERAL DATA: OVERALL DIMENSIONS (In.): Height—Road to Roof, No Load	GENERAL DATA: Tires (In.)	GENERAL DATA: Oil Pressure to—	GENERAL DATA: Carburetors—No. Used and Type	GENERAL DATA: Cooling System	GENERAL DATA: Shifting Method	GENERAL DATA: No. of Forward Speeds	REAR AXLE: Final Drive Type	REAR AXLE: Gear Ratio (To -1)	REAR AXLE: Torque Taken By	Independent Suspension	Service Brakes	Shipping Weight (Lb.)
ITALY—*continued*																											
Ferrari 290 Europa	12-2.68x2.68	200-6300	180.8	8.00	V	IH		Ch	109.2	51.7	51.5				7.10/15	abcde	3-DD	Pu	HS	4				Fr	H	2380
375 America	12-3.31x2.68	300-6300	275.0	8.00	V	IH		Ch	109.2	51.7	51.5				7.10/15	abcde	3-DD	Pu	HS	4				Fr	H	2300
375 Millemiglia	12-3.31x2.68	340-7000	275.0	9.00	V	IH			105.0	52.2	52.0				(5)		3-DF	Pu	HS	4				Fr	H	1984
500 Mondial	4-3.54x3.07	170-7000	121.1	9.50	IL	IH			88.5	50.3	50.6				(6)		2-Dt	Pu	HS	5				Fr	H	1543
750 Monza	4-4.06x3.54	235-6200	183.0	8.00	IL	IH		SG	88.6	50.3	50.6				6.00/16		2-	Pu		5					H	
250 G-T	12-2.87x2.31	220-7000	160.1	9.00	V	IH		Ch	102.4	52.2	52.0				6.00/16		3-	Pu		4					H	
Fiat 600C	4-2.09x2.64	17-4400	34.7	6.45	IL	IH	AA	Ch	78.0	44.0	42.7	128.0*	50.6	55.5	4.25/16	abc	1-SD	TS	HS	4	SB	5.12	Sp	Fr	H	1276
8V	8-2.83x2.41	105-6000	121.8	8.50	V	IH	AA	Ch	94.5	50.8	50.8	159.0	61.8	50.8	6.50/15	abce	2-DD	Pu	HS	4	Hy	4.44	TA	FR	H	2047
8V	8-2.83x2.41	115-6000	121.8	8.50	V	IH	AA	Ch	94.5	50.8	50.8	159.0	61.8	50.8	6.50/15	abce	2-DD	Pu	HS	4	Hy	4.44	TA	FR	H	2047
1100(103)	4-2.68x2.95	38-4400	66.4	6.70	IL	IH	AA	Ch	92.1	48.4	47.7	148.6	57.4	56.5	5.20/14	abce	1-SD	Pu	HS	4	Hy	4.30	Sp	Fr	H	1740
1100TV	4-2.68x2.95	50-5200	66.4	7.00	IL	IH	AA	Ch	92.1	48.4	47.7	148.6	57.4	56.5	5.20/14	abce	1-DD	Pu	HS	4	Hy	4.30	Sp	Fr	H	1795
500C	4-2.09x2.64	17-4400	34.7	6.45	IL	IH	AA	Ch	78.0	44.0	42.7	130.7*	50.6	57.3	(7)	abc	1-SD	TS	HS	4	SB	5.12	Sp	Fr	H	1400
1400A	4-3.23x2.99	50-4600	85.1	7.00	IL	IH	AA	Ch	104.3	52.2	52.0	169.5	65.2	62.0	5.90/14	abce	1-DD	Pu	HS	4	Hy	4.44	Sp	Fr	H	2380
1400A Diesel	4-3.23x3.54	40-3200	116.0	20.00	IL	IH	AA	HG	104.3	52.4	52.2	169.5	65.2	62.0	6.40/14	abce	Ini	Pu	HS	4	Hy	4.10	Sp		H	2618
1900A	4-3.23x3.54	70-4000	116.0	7.50	IL	IH	AA	Ch	104.3	52.4	52.2	169.5	65.2	62.0	6.4 /14	abce	1-DD	Pu	HS	4	Hy	4.30	Sp	Fr	H	2544
1100	4-2.68x2.95	38-4400	66.4	6.70	IL	IH	AA	Ch	92.1	48.4	47.7	147.4	57.4	56.5	5.90/14	abce	1-SD	Pu	HS	4	Hy	4.30	Sp	Fr	H	1851
Iso Isetta	1-1.89x2.60	10-4500	7.3	6.50	IL	N	AA	N	59.1	47.2	19.7	80.0	52.0	52.0	4.80/10	N	1-St	AC	HS	4	Ch		Sp	Fr	H	720
Lancia Appia	4-2.69x2.95	39-3800	66.5	7.40	V	IH	AA	Ch	97.6	46.4	46.5	152.2	55.9	56.0	5.00/15	abce	1-SD	Pu	HS	4	Hy	4.55		Fr	H	1612
C10 Appia	4-2.68x2.95	38-4800	66.5	7.40	V	IH	AA	Ch	97.6	46.4	46.5	152.7	55.9	56.0	5.00/15	abce	1-St	Pu	HS	4	Hy	5.22		Fr	H	1808
B12	6-2.95x3.27	87-4300	138.2	7.40	V	IH	AA	Ch	112.2	49.2	51.2	178.6	61.4	60.3	6.50/15	abce	1-Dt	Pu	HS	4	SB	4.45		Fr	H	2648
B20 Datum 2962	6-3.07x3.27	118-5000	149.9	8.00	V	IH	AA	Ch	103.3	49.2	51.2	172.0	61.0	63.5	6.50/15	abce	1-Dt	Pu	HS	4	SB	4.27		Fr	H	2535
Maserati A6G/54	6-3.01x2.83	120-6500	121.0	7.10	V	IH	AA	Ch	100.4	52.0	48.0	155.0	60.0	51.0	6.00/16	abce	3-	Pu	Pr	4	SB	4.75		Fr	H	2100
A6GCS	6-3.01x2.83	170-7200	121.0	8.75	IL	IH	AA	SG	90.9	52.0	48.0	150.0	60.0	31.0	6.00/16	abc	3-Dt	Pu	HS	4	SB	Var		Fr	H	1650
250/F	6-3.31x2.95	250-7200	152.1	12.00	IL	IH	AA	HG	89.0	51.2	49.2	156.0	65.0	39.0	(6)	abc	3-	Pu	HS	4	SbR	Var		Fr	H	1400
Nardi 750cc	2-3.07x3.07	50-6000	45.8	8.90	HO	IH	AA	HG	74.0	45.3	44.1	140.0			35.4	4.00/16		2-St	AC	HS	4	SB	Var	Sp	Fr	H	660
750cc	2-3.07x3.07	53-6200	45.8	10.20	HO	IH	AA	HG	70.9	43.3	39.4	129.0			35.4	4.00/16		2-St	AC	HS	4	SB	Var	Sp	Fr		640
750cc	4-2.50x2.32	45-6800	45.8	10.00	IL	IH	AA	HG	74.8	45.3	44.1	140.0			35.4	4.00/16		2-St	Pu	HS	4	SB	Var	Sp	Fr	H	660
O.S.C.A. 1100/2AD	4-2.76x2.80	92-6800	66.0	9.00					88.6	47.2	45.3				5.00/15			Pu	HS	4		Var		Fr	H	1899
1500/2AD	4-3.07x3.07	125-6300	90.9	9.50					88.6	47.2	45.3				(9)			Pu	HS	4		Var		Fr	H	1653
2000S	6-2.99x2.87	165-6900	121.2	9.00					88.6	49.6	47.6				(6)			Pu	HS	4		Var		Fr	H	1816
JAPAN																											
Nissan Datsun 110	4-2.36x2.99	28-4000	92.5	6.50	IL	L	AA	HG	86.6	48.1	46.5	152.0	52.7	59.2	5.00/15	ce	1-SD	Pu	HS	4	Hy	5.43	Sp	N	H	1890
Otta PH	4-2.42x2.99	24-4000	55.1	6.50	IL	L	AA	HG	84.6	45.7	45.3	152.4	58.3	61.0	5.00/16	abce	1-Ds	Pu	HS	3	SB	6.80	Sp	N	H	2048
PG	4-2.42x2.99	24-4000	55.1	6.50	IL	L	AA	HG	84.6	45.7	45.3	163.1	59.1	60.1	5.00/15	abce	1-Ds	Pu	HS	3	Hy	5.86	Sp	Fr	H	1850
Toyopet Master RR	4-3.03x3.07	48-4000	88.5	8.00	IL	IH	AA	HG	90.6	51.9	53.9	168.3	65.5	61.8	6.00/16	abce	1-SD	Pu	HS	3	Hy	5.29	Sp	N	H	2530
Crown RS	4-3.03x3.07	48-4000	88.5	8.00	IL	IH	AA	HG	99.6	52.2	53.9	168.7	66.1	60.0	6.40/15	abce	1-SD	Pu	HS	3	Hy	5.29	Sp	Fr	H	2530
SPAIN																											
Pegaso 102B/2.8	8-3.14x2.76	—6300	171.5	Var	V	IH	AA	HG	92.0	52.0	50.8	162.0	63.0	51.0	6.00/16	abc	(10)	Pu	HS	5	SB	Var	Sp	Fr	H	2183
102BS/2.8	8-3.14x2.76	250-6600	171.5	Var	V	IH	AA	HG	92.0	52.0	50.8	162.0	63.0	51.0	6.50/16	abc	1-DH	Pu	HS	5	SB	Var	Sp	Fr	H	2340
102B/3.2	8-3.36x2.72	200-6000	193.9	Var	V	IH	AA	HG	92.0	52.0	50.8	162.0	63.0	51.0	6.50/16	abc	2-FB	Pu	HS	5	SB	Var	Sp	Fr	H	2183
102BSS/3.2	8-3.36x2.72	370-6000	193.9	Var	V	IH	AA	HG	92.0	52.0	50.8	162.0	63.0	51.0	6.50/16	abc	4-DH	Pu	HS	5	SB	Var	Sp	Fr	H	2340
SWEDEN																											
SAAB 92B	2-3.15x2.99	28-4000	46.6	6.80	IL	N	AA	N	97.2	48.4	48.4	155.5	53.7	57.0	5.00/15	N	1-SD	TS	HS	3	HG	5.38		FR	H	1725
Volvo PV-444-E	4-3.35x3.15	44-4000	66.0	6.40	IL	IH	AA	HG	102.3	51.2	51.0	177.0	62.0	63.0	5.90/15	abc	1-SD	Pu	HS	3	Hy	4.56	TA	Fr	H	1998
PV-445-DH	4-3.35x3.15	44-4000	66.0	6.40	IL	IH	AA	HG	102.3	51.2	51.0	174.0	63.0	66.0	6.00/15	abc	1-SD	Pu	HS	3	Hy	5.43	Sp	Fr	H	2270
PV-831, 832	6-3.31x4.33	90-3800	223.8	6.50	IL	L	AA	Ch	127.9	59.2	60.0	205.0	73.0	70.0	7.80/15	abc	1-SD	Pu	HS	3	Hy	4.45	Sp	Fr	H	3781

ABBREVIATIONS

*—Four barrel carburetor optional.
•—Front wheel drive.
■—Mechanical or hydraulic.
†—Alternate engine, transmission and rear axle available.
•—Without bumpers.
(1)—Fully automatic, preselective or hand shift optional.
(2)—One downdraft or one horizontal with supercharger.
(3)—3.90 with std. trans. and 4.22 with overdrive.
(4)—5.90 or 6.10/15.
(5)—Front, 6.00/16; rear, 7.50/16.
(6)—Front, 5.25/16; rear, 6.00/16.
(7)—4.25 or 4.40/15.
(8)—Front, 5.50/16; rear, 7.00/16.
(9)—Front, 5.00/15; rear, 5.50 or 5.90/15.
(10)—One of four dual downdrafts.

a—Main bearings.
b—Connecting rod bearings.
c—camshaft bearings.
d—Piston pins.
e—Timing chain or gears.
AA—Aluminum alloy.
AC—Air cooled.
AS—Aluminum alloy and steel strut.
AT—Alloy tinplated.
Au—Automatic.
BG—Bevel gear.
Ch—Chain.
CH—Chain and helical gear.
DD—Dual downdraft.
DF—Downdraft, four barrel.
DH—Dual horizontal.
Do—Downdraft.
Dt—Dual throat.
F—Valves in side and head.
FB—Four barrel.
Fr—Front.
FR—Front and rear.
H—Hydraulic.
HA—Hand shift or automatic.
HG—Helical gear.
HM—Front, hydraulic; rear, mechanical.
Ho—Horizontal.
HO—Horizontally opposed.
HS—Hand shift.
HU—Horizontal updraft.
Hy—Hypoid.
IH—In head.
IL—In line.
Inj—Injectors.
L—Valves at side.
M—Mechanical.
MH—Mechanical and hydraulic.
N—No or none.
NA—Not available.
Pr—Preselective.
Pu—Pump.
RA—Radius arms.
Rah—Rear axle housing.
SB—Spiral bevel.
SbH—Spiral bevel or hypoid.
SbR—Straight bevel, double reduction.
SD—Single throat downdraft.
SDR—Spiral bevel, double reduction.
SG—Spur gear.
SH—Single throat, horizontal.
Sp—Springs.
SS—Single sleeve.
St—Single throat.
StB—Straight bevel.
SU—Single throat, updraft.
TA—Torque arm.
TaS—Torque arms and springs.
TP—Thermo-syphon and pump.
TS—Thermo-syphon.
TT—Torque tube.
V—"V" type.
Var—Various.
Wo—Worm.

For Directory of Car Manufacturers listed above, see page 263

• U. S. PASSENGER CAR ENGINE TRENDS •

Average Car Weight and Engine Hp.

Based on Number of Units Sold

	No. of Units Sold*	Gross Shipping Wgt. of Cars Sold (lb.)†	Gross Max. Hp. of Cars Sold‡	Average Weight (lb.)	Average Hp.
1930	2,825,979	7,339,000,000	142,800,000	2,700	54
1931	1,990,141	5,380,000,000	109,200,000	2,020	57
1932	1,096,399	3,289,000,000	75,400,000	2,920	69
1933	1,493,794	4,220,000,000	106,000,000	2,820	71
1934	1,999,957	5,960,000,000	156,000,000	2,940	83
1935	2,743,998	8,120,000,000	234,000,000	2,960	85
1936	3,484,497	10,190,000,000	291,000,000	3,000	96
1937	3,483,792	10,470,000,000	303,900,000	3,005	87
1938	1,991,021	5,743,000,000	199,200,000	3,035	89
1939	2,683,377	7,969,000,000	239,200,000	2,996	90
1940	3,415,986	10,511,000,000	312,150,000	3,077	91
1941	3,731,106	11,750,000,000	386,000,000	3,151	98
1946	1,015,196	999,000,000	101,200,000	3,303	100
1947	3,167,231	10,529,700,000	317,400,000	3,324	100
1948	3,490,992	11,582,200,000	352,600,000	3,300	100
1949	4,839,342	15,901,000,000	500,100,000	3,286	104
1950	6,329,430	20,624,200,000	660,400,000	3,260	104
1951	5,060,903	16,461,360,000	541,970,081	3,239	107
1952	4,186,384	13,628,614,000	467,497,488	3,346	112
1953	5,736,000	19,209,000,000	669,684,332	3,436	131
1954	5,536,464	18,708,481,977	749,752,007	3,380	135

† Shipping weight of 5 passenger, 4 door sedan taken as typical and used in conjunction with new registrations of each model.
‡ Maximum horsepower taken from previous Statistical issues and used in conjunction with new registrations of each model.
* R. L. Polk & Co. registrations of new passenger cars.

Progress in Engine Design

Average for Passenger Car Engines—Based on Number of Chassis Models Offered for Years 1930-1952
Based on Engine Models for 1953-1955

	Average Piston Speeds (Ft. per Min.)	Average Displacement per Cylinder (Cu. In.)	Average Number of Cylinders	Average R.P.M. at Max. B.H.P.	Average Brake Horsepower
1930	2390	37.6	7.04	3170	87.6
1931	2384	36.8	7.49	3230	96.0
1932	2390	36.7	7.78	3256	101.0
1933	2463	36.7	7.88	3360	106.5
1934	2508	36.2	7.97	3420	112.5
1935	2536	36.1	7.91	3480	109.6
1936	2490	35.8	7.99	3467	110.1
1937	2564	35.8	7.74	3556	115.9
1938	2545	35.7	7.98	3576	111.7
1939	2499	35.1	7.29	3543	105.9
1940	2490	35.0	7.25	3586	107.9
1941	2492	35.2	7.15	3803	110.9
1942	2534	34.9	7.20	3638	112.5
1946	2522	35.4	6.97	3682	108.4
1947	2550	35.8	7.00	3680	108.4
1948	2492	35.8	6.96	3629	107.9
1949	2522	35.8	6.80	3690	113.3
1950	2505	37.2	6.98	3657	116.8
1951	2505	36.8	6.80	3758	118.0
1952	2523	36.6	6.87	3823	122.6
1953	2560	36.1	6.89	3969	125.0
1954	2589	36.0	6.79	3953	140.6
1955	2565	36.7	7.49	4204	173.8

	Average Hp. per Cu. In. of Displacement	Average Compression Ratio	Average B. M. E. P. at Maximum Hp. (lb. per sq. in.)	Bore, Stroke and Displacement		
				Bore (In.)	Stroke (In.)	Disp. (Cu. In.)
1930	.331	5.15	82.7	3.26	4.51	264.6
1931	.344	5.23	84.3	3.21	4.45	273.0
1932	.363	5.29	86.2	3.26	4.41	283.9
1933	.376	5.57	88.5	3.25	4.40	284.1
1934	.398	5.72	90.1	3.24	4.40	280.2
1935	.390	5.88	90.2	3.23	4.38	271.4
1936	.411	6.14	92.3	3.20	4.32	267.9
1937	.417	6.26	93.1	3.26	4.31	277.6
1938	.412	6.32	91.2	3.26	4.27	271.1
1939	.418	6.31	92.7	3.24	4.23	256.3
1940	.429	6.41	93.9	3.25	4.17	254.9
1941	.431	6.63	96.7	3.26	4.18	282.1
1942	.440	6.60	98.6	3.26	4.18	281.8
1946	.440	6.77	94.6	3.27	4.11	246.4
1947	.437	6.73	94.5	3.26	4.18	280.4
1948	.437	6.78	95.3	3.29	4.12	247.1
1949	.483	6.83	97.3	3.25	4.10	288.8
1950	.466	7.00	96.6	3.27	4.11	296.1
1951	.474	7.09	99.5	3.40	4.00	290.4
1952	.488	7.14	101.4	3.38	3.96	281.6
1953	.518	7.31	106.0	3.40	3.97	341.4
1954	.564	7.31	113.1	3.40	3.93	340.5
1955	.639	7.87	118.1	3.62	3.57	371.8

★ ★ ★ ★ ★

SPECIFICATIONS

KEY TO DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost. If it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range is High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO ABBREVIATIONS

MAKES—ALL
BC—Brockway
Continental.
BL—Brown-Lipe.
Bu or Bud—Buda.
Chev—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
DC—Diamond T
Continental.
Eat—Eaton.
Fu—Fuller.
GMC—General Motors.
Her—Hercules.
HS—Hall-Scott.
Int.—International.
LeR—Le Roi.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Spi—Spicer.
T or Tim—Timken-Detroit Axle Co.
WG—Warner Gear.
Wau—Waukesha.
Wh—White.

REAR AXLE
Final Drive and Type
B—Bevel.
CD—Chain Drive.
F—Full-floating.
H or Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
½—Semi-Floating.

REAR RATIOS
(**)—Only one ratio.

DRIVE AND TORQUE
H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods.

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Ford or Chevrolet Models.
(R)—Remanufactured Fords.
^—Denotes "Includes Cab" when used with weights or prices.

AUTOCAR
†—Auxiliary transmission standard equipment.
*—Front only; rear, 14.00/24.

BROCKWAY
†—Auxiliary transmission Fuller 3A65.

CHEVROLET
*—Includes spare tire, full fuel tank and cooling system.
^—7.50/20 can be used on the front with no decrease in G.V.W. when 8.25/20 are used on dual rear wheels.
: :—Own Loadmaster engine available at extra cost.
‡—8.25/20 front tires are required when 9.00/20 dual rears are used.
††—Diameter: (Average) Front, 2.6858; Front Center, 2.7168; Rear Center, 2.7478; Rear, 2.7788. Total Length 5 in.
♦—Hydramatic optional.
‡—Heavy duty 3 speed transmission optional.
††—Also available in 5.14 ratio.
□—5.43 available.
□□—Two speed axle available.
*—8 ¼x2 ⅞x ¼ is used with heavy-duty equipment.
¶—Powerglide optional.
*—Blue Flame 125 engine optional.
^^—Jobmaster 261 engine optional.

DIAMOND T
°—14000 to 16000.
°—16100 to 19000.
^—16500 to 21000.
‡—24500 to 29500.
□—26500 to 31500.
‡—21000 to 25000.
‡—25000 to 29500.
‡—50000 to 60000.
°°—17000 to 20000.
††—17500 to 22000.
°°—17000 to 23000.
^^—17700 to 25000.
^^—18000 to 30000.
‡‡—30000 to 36000.
♦♦—23000 to 26000.
♦♦—26000 to 30000.
(a)—29500 to 34000.
(b)—32000 to 36000.
(c)—34000 to 40000.
(d)—40000 to 47000.
(e)—36000 to 43000.

DODGE
^—Front only; Rear 7.00/168.
*—Front only;
Rear 8.25/168.
¶—Front only;
Rear 7.50/20.
‡—Front only;
Rear 9.00/20.
†Front only;
Rear 10.00/20.
■—Front only;
Rear 8.25/20.
•—Twin carburetion.

DUPLEX
‡—Torque Divider, Timken T70-2 speed.

FORD
°—17000 for 220" Wheelbase.
•—Rear Only.
■—Front Only;
Rear 8.25/188.
▾—Cowl Axle Dimension.
†—9.25x2.94x.25 Optional.
^—Weight Includes Cab.
††—With dual rear wheels only; 118-2800 hp and 195 torque with single wheels.

KENWORTH
♦♦—Timken T13129 PA Trailing Axle.
†—14.00/24, front; 16.00/24, rear.
■—C.O.E. optional.
*—One man cab.
^—Torque converter plus Torquematic transmission optional.
■—Cab beside engine optional.
♦—Both C.O.E. and cab beside engine optional.
††—14.00/24 front; 18.00/25 rear.
°°—Cummins NHRBSID 600.
‡‡—Allison TCL 654 plus TG 602.

NAPCO
*—NAPCO — Northwestern Auto Parts Company (Chevrolet 4-wheel drive conversion).
♦♦—See same footnote under Chevrolet.

OSHKOSH
^—Includes cab.
■—1091 cu. in.
°°—Hydraulic coupling optional.
^—Dependent upon engine.

REO
♦—Model 331-OA and 331-OA LPG engines can be furnished.
♦—Two speed axle available.
^—Double reduction and 2 speed available.
*—Buda 6DT8-468 diesel engine available.
‡—Model 255-OA-LPG or 292-OA engine can be furnished.
†—Front only;
Rear 10.00/20.
‡—OH-160 or OH-160 LPG engine can be furnished.
•—OH-160LPG engine can be furnished.
▾—Model OV-220 engine can be furnished.
^—Model OV-225 engine can be furnished.
: :—Model 8QW tandem axle can be furnished.

STUDEBAKER
^—H.D. 6.20 or 6.80 optional.
*—Two speed 5.93-8.19 optional.
■—Two speed 6.48-8.86 optional.
‡—Front only;
Rear 8.25/20D
^—Front, centrifugal cast; rear, composite.
♦—Reinforcing plate at rear of frame.

TRUCKSTELL
*—Single front, dual rear.
♦♦—With 3 speed power divider.
♦—Weight with cab and maximum tires.
*—Including slip-over reinforcing frame channels.
†—Air brake optional.

WARD LA FRANCE
‡—Available with optional rear axles.
°°—Available with 11.00/22 or 12.00/20 tires for G.V.W. of 60,000 lbs and optional front and rear axles.
♦♦—Auxiliary transmission. Fuller 5A65, 3H65, 3A92 and 3H92.

WILLYS
*—Complete vehicle-Pick-up Type body.
‡—Three speed transmission, 2 speed transfer case.

1955 TRUCK SPECIFICATIONS

MAKE AND MODEL	WHEELBASE: Minimum Standard	WHEELBASE: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES (D-dual rear, S-single rear): Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	TRANSMISSION: Make and Model	Forward Speeds	REAR AXLE: Make and Model	Gear and Type	Drive and Torque	Gear Ratio Range in High
Autocar																		
C65	158	194	28000	*9900	10.00/20D	11.00/22	Wh 290A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Own FT	2SF	H	5.84-10.05
(T) C65T	142	158	30000	*9700	10.00/20D	11.00/22	Wh 290A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Own FT	2SF	H	5.84-10.05
C66D	146	170	30000	*10425	10.00/20D	11.00/22	Wh 290A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Own TK	2SF	H	5.84-9.30
CL65	158	194	30000	*9675	10.00/20D	11.00/22	LeR TH-540	6-4½x4½	540	6.7	460	207-3100	Spi 6453	5	Own FT	2SF	H	5.54-10.05
(T) CL65T	142	158	30000	*9675	10.00/20D	11.00/22	LeR T-H540	6-4½x4½	540	6.7	460	207-3000	Spi 6453	5	Own FT	2SF	H	5.84-10.05
CL65D	146	170	30000	*10400	10.00/20D	11.00/22	LeR T-H540	6-4½x4½	540	6.7	460	207-3000	Spi 6453	5	Own TK	2SF	H	5.84-9.30
(T) C84T	153	169	60000	*10560	10.00/20D	11.00/22	Wh 290A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Own TK	2SF	H	5.84-9.30
C85	158	194	36000	*10615	10.00/20D	11.00/22	Wh 290A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Own TK	2SF	H	5.84-9.30
(T) C85T	142	158	60000	*10585	10.00/20D	11.00/22	Wh 290A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Own TK	2SF	H	5.84-9.30
(T) CL84T	153	169	60000	*10560	10.00/20D	11.00/22	LeR T-H540	6-4½x4½	540	6.7	460	207-3000	Spi 6453	5	Own TK	2SF	H	5.84-9.30
CL85	158	194	36000	*10590	10.00/20D	11.00/22	LeR T-H540	6-4½x4½	540	6.7	460	207-3000	Spi 6453	5	Own TK	2SF	H	5.84-9.30
(T) CL85T	142	158	60000	*10560	10.00/20D	11.00/22	LeR T-H540	6-4½x4½	540	6.7	460	207-3000	Spi 6453	5	Own TK	2SF	H	5.84-9.30
(T) (D) DC85T	142	158	50000	*9650	10.00/20D	11.00/22	Cum J8S	6-5½x6	401	15.5	360	150-2500	Spi 6453	5	Own FT	2SF	H	5.84-9.30
(T) (D) DC74T	158	178	60000	*11800	10.00/20D	11.00/22	Cum HRB600	6-5½x6	743	15.5	537	165-1800	Fu SC720†	5	Own FT	2SF	H	5.84-10.05
(T) (D) DC75T	141	157	60000	*11800	10.00/20D	11.00/22	Cum HRB600	6-5½x6	743	15.5	537	165-1800	Fu SC720†	5	Own FT	2SF	H	5.84-10.05
(D) DC102	223	223	36000	*13500	10.00/20D	12.00/24	Cum HRB600	6-5½x6	743	15.5	537	165-1800	Spi 8041†	4	Own G	2SF	H	5.34-10.40
(T) (D) DC102T	159	175	76800	*13200	10.00/20D	11.00/24	Cum HRB600	6-5½x6	743	15.5	537	165-1800	Spi 8041†	4	Own TK	2SF	H	5.84-9.30
(T) (D) DC103T	141	157	76800	*13250	10.00/20D	11.00/24	Cum HRB600	6-5½x6	743	15.5	537	165-1800	Spi 8041†	4	Own TK	2SF	H	5.84-9.30
(D) DC103D	169	169	54000	*16800	12.00/24D	12.00/24*	Cum HB600	6-5½x6	743	15.5	537	165-1800	Spi 8041†	4	Tim 79748	2SF	R	7.69-11.36
Available																		
(c.o.e.) 200			15000	*5500	7.00/20D	8.25/20	Wau BM	6-3½x4½	263	5.9	179	78-2900	WG T9	4	Tim E100DPH	HF	H	** -6.20
(c.o.e.) 225			16500	*6200	7.50/20D	8.25/20	Wau BZ	6-4x6½	320	5.9	235	105-3200	WG T97	4	Tim E100DPH	HF	H	** -6.20
(c.o.e.) 250			20000	*6400	8.25/20D	9.00/20	Wau BZ	6-4x6½	320	5.9	235	105-3200	Fu 5A330	5	Tim H100DPH	HF	R	** -6.80
(c.o.e.) 400			22000	*6800	9.00/20D	10.00/20	Wau BZ	6-4x6½	320	5.9	235	105-3200	Fu 5A330	5	Tim L100DPH	HF	R	** -6.83
(c.o.e.) 500			23000	*7500	9.00/20D	10.00/20	Wau MZA	6-4½x4½	404	5.8	285	130-3000	Fu 5F430	5	Tim L100DPH	HF	R	** -6.83
(c.o.e.) 550			28000	*8100	10.00/20D	11.00/20	Wau MZA	6-4½x4½	404	5.8	285	130-3000	Fu 5F430	5	Tim Q100DPH	HF	R	** -7.80
(c.o.e.) 550X			32000	*9600	10.00/20D	11.00/24	Wau MZA	6-4½x4½	404	5.8	285	130-3000	Fu 5F430	5	Tim R200DPH	2F	R	** -7.84
(c.o.e.) 600			28000	*10000	10.00/20D	11.00/24	Wau 140 GK	6-4½x5½	525	6.4	425	172-2600	Fu 5A650	5	Tim R100P	HF	R	** -7.40
(c.o.e.) 601			28000	*10900	10.00/20D	11.00/24	Wau 145 GK	6-5½x6	779	6.2	595	240-2400	Spi 9051A	4	Tim R100P	HF	R	** -7.40
(D) (c.o.e.) 600			28000	*11250	10.00/20D	11.00/24	Cum NH8	6-5½x6	743	17.	535	200-2100	Spi 9051A	4	Tim R100P	HF	R	** -7.40
Biederman																		
NSH	130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6-4x4½	339	6.9	272	131-3200	Fu 5A330	5	TimH100DPH	SF	H	** -7.2
NSD	130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6-4x4½	339	6.9	272	131-3200	Fu 5A330	5	TimH300DPH	2D	H	6.67-9.44
NSR	142	171	21000	7420	8.25/20D	10.00/20	Her JXLD	6-4x4½	339	6.9	272	131-3200	Spi 3541UP	5	TimH110DPH	HFd	H	** -6.6
HL	93	187	30000	12200	10.00/20D	12.00/24	Wau 140 GK	6-4½x5½	525	6.4	425	172-2600	Spi 6252A	5	Tim R200	HFd	H	6.41-9.37
CH	137	190	29000	7800	9.00/20D	10.00/20	Con T8427	6-4½x4½	427	6.4	356	170-3000	Fu 5A620	5	Tim QT300	2D	H	6.38-8.81
Brockway																		
86WH	156	188	17000	5900	8.25/20	8.25/20	BC 388	6-3½x4½	290	6.3	212	104-3200		4		HF	H	5.83-6.80
128W	130	194	22000	6700	9.00/20	9.00/20	BC 403	6-4x4½	330	6.7	258	125-3000		5		HF	R	6.8-7.20
146W	139	212	26000	7780	9.00/20	10.00/20	BC 403	6-4x4½	330	6.7	258	125-3000		5		HF	R	6.16-7.80
148W	139	212	28000	8030	10.00/20	11.00/20	BC 428X	6-4½x4½	427	6.7	332	145-2800		5		HF	R	6.16-7.80
151W	141	209	30000	9250	10.00/20	11.00/20	BC 428X	6-4½x4½	427	6.7	332	145-2800		5		2F	R	6.74-8.38
152W	141	221	32000	9425	10.00/20	11.00/20	BC 428X	6-4½x4½	427	6.7	332	145-2800		5		dF	R	6.14-6.71
153W	141	221	36000	9600	11.00/20	11.00/22	BC 428X	6-4½x4½	427	6.7	332	145-2800		5		2F	R	5.91-9.23
(T) 154W	142	161	45000	8800	10.00/20	10.00/22	BC 428X	6-4½x4½	427	6.7	332	145-2800		5		dF	R	6.14-6.71
260XL	141	209	38000	11200	11.00/22	12.00/24	BC 468	6-4½x5½	513	5.9	400	169-2800		5		2F	R	6.38-9.76
(T) 147W	132	162	45000	7100	9.00/20	10.00/20	BC 418D	6-4x4½	363	6.7	293	146-3000		5		HF	H	6.13-7.8
(T) 155W	132	162	63000	7735	10.00/20	10.00/22	EC 423D	6-4½x4½	427	6.4	352	165-3000		5		HF	H	6.16-7.8
(T) 240W	141	161	60000	10000	10.00/22	11.00/20	EC 463	6-4½x5½	513	5.9	400	169-2900		5		dSF	R	6.14-6.71
(T) 254W	144	163	60000	9450	10.00/22	11.00/20	BC 468	6-4½x5½	513	5.9	400	169-2900		5		dSF	R	6.14-6.71
(T) 255W	144	163	66500	9700	10.00/22	11.00/20	BC 483D	6-4½x5½	572	6.3	484	220-2800		5		dHF	H	5.84-7.09
(T) 260WD	141	161	60000	10500	11.00/22	11.00/24	BC 483D	6-4½x5½	572	6.3	484	220-2800		5		dSF	R	6.16-6.71
260WLD	141	209	38000	11300	11.00/22	12.00/24	BC 483D	6-4½x5½	572	6.3	484	220-2800		5		2HF	R	6.38-9.76
Chevrolet																		
Sdn. Dlvy. D54	115		4100	**3275	6.70/15S	6.70/15S	O-Bl. Fl. 118*	6-3½x3½	236	7.5	200	115-3700	Own‡	3	Own	Hy	T	** -3.7
H54	116		4800	*2560	6.00/16S	15S	O-Thrift Mas.	6-3½x3½	235	7.5	200	112-3700	Own‡	3	Own	Hy	T	** -3.9
(c.f.) J54	125		6900	*2855	15S	7.50/17S	O-Thrift Mas.	6-3½x3½	235	7.5	200	112-3700	Own‡	3	Own	HyF	H	†† -4.57
K54	125		7000	*2675	15S	7.50/17S	O-Load Mas.	6-3½x3½	235	7.5	192	110-3600	Own‡	3	Own	HyF	H	** -5.14
(c.f.) L54	137		8800	*3195	7.00/17S	7.00/18	O-Thrift Mas.	6-3½x3½	235	7.5	200	112-3700	Own‡	4	Own	HyF	H	** -5.14
M54	137		10000	*2950	7.00/17S	7.00/18	O-Load Mas.	6-3½x3½	235	7.5	192	110-3600	Own‡	4	Own	HyF	H	** -5.14
N54	137		14000	*3820	6.50/20D	7.50/20	O-Thrift Mas. ‡‡	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫ -6.17
P54	161		14000	*3925	6.50/20D	7.50/20	O-Thrift Mas. ‡‡	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫ -6.17
R54	161		12000	*4190	6.50/20D	7.50/20	O-Thrift Mas. ‡‡	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫ -6.17
SV54	137		15000	*4310	7.50/20D	9.00/20‡	O-Load Mas. ^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
SW54	161		15000	*4385	7.50/20D	9.00/20‡	O-Load Mas. ^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
SX54	179		15000	*4515	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
(c.o.e.) S554	116		15000	**4790	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	192	110-3600	Own	4	Own	HyF	H	▫▫ -6.17
(c.o.e.) ST54	134		15000	**4860	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	192	110-3600	Own	4	Own	HyF	H	▫▫ -6.17
(c.o.e.) SU54	158		15000	**4960	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	192	110-3600	Own	4	Own	HyF	H	▫▫ -6.17
S54	110		16000	**4790	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	192	110-3600	Own	4	Own	HyF	H	▫▫ -6.17
(c.o.e.) T54	134		16000	**4860	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	192	110-3600	Own	4	Own	HyF	H	▫▫ -6.17
(c.o.e.) U54	158		16000	**4945	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	192	110-3600	Own	4	Own	HyF	H	▫▫ -6.17
V54	137		16000	*4310	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
W54	161		16000	*4385	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
X54	179		16000	*4515	7.50/20D	9.00/20‡	O-Load Mas.^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
Sch. Bus Ch. Y54	190		16000	*4725	7.50/20D	8.25/20	O-Load Mas.^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
Sch. Bus Ch. Z54	212		16000	*4730	7.50/20D	8.25/20	O-Load Mas.^^	6-3½x3½	235	7.5	200	112-3700	Own	4	Own	HyF	H	▫▫ -6.17
Diamond T																		
323	130	190	*	4000	6.00/20	8.25/20	Own 252	6-3½x4½	252	7.2	216	113-3600	WG T96	4	Tim E100	HF	H	6.2-7.2
323C	99	150	**	6100	6.00/20	8.25/20	Own 252	6-3½x4½	252	7.2	216	113-3600	WG T96	4	Tim E100	HF	R	6.2-7.2
422	130	250	*	5800	6.00/20	9.00/20	Con K6271	6-3½x4½	271	6.5	216	112-3000	WG T96	4	Cla R1000	HF	H	5.57-6.33
422C	99	150	**	6700	6.00/20	9.00/20	Con K6271	6-3½x4½	271	6.5	216	112-3000	WG T96	4	Tim E100	HF	R	6.2-7.2
522	130	250	*	6100	7.00/20	9.00/20	Con K6330	6-4x4½	330	6.5	266	141-3000	Cla 205V	5	Tim H100	HF	H	5.28-6.16
522C	99	150	††	7000	7.00/20	10.00/20	Con K633L	6-4x4½	330	6.5	266	141-3000	Cla 205V	5	Tim H100	HF	R	5.28-6.16
(T) 532	133	157	19000	7400	9.00/20	10.00/22	Own XL372	6-4½x4½	372	6.5	306	155-2950	Cla 267VO	5	Tim H100	HF	H	5.28-6.83
622	130	250	**	6900	7.50/20	10.00/20	Con K6383	6-4x4½	363	6.5	266	150-3000	Cla 205VO	5	Eat 1790	SF	H	6.50-7.16
622C	99	150	**	7500	7.50/20	10.00/20	Con K6383	6-4x4½	363	6.5	266	150-3000	Cla 205VO	5	Eat 1790	SF	R	6.50-7.16
(T) 639	133	211	†	7700	10.00/20	11.00/20	Own XL406	6-4½x4½	406	6.5	338	164-2750	Cla 290V	5	Eat 1790	SF	H	6.5 -7.16
660	133	157	17700	6850	9.00/20	10.00/22	Con T8427	6-4½x4½	427	6.5	350	164-2700	Cla 290VO	5	Eat 1790	SF	R	6.50-7.16
(T) 662	133	157	22000	8500	10.00/20	11.00/20	Own XL490	6-4½x5½	490	6.5	398	174-2600	Cla 290VO	5	Eat 1793	SF	R	6.5 -7.16
726	133	211	‡	9050	9.00/20	11.00/22	Con T8427	6-4½x4½	427	6.5	350	164-2700	Cla 290V	5	Eat 18903	SFd	R	
726C	99	150	‡‡	8500	9.00/20	11.00/20	Con T8427	6-4½x4½	427	6.5	350	164-2700	Cla 290V	5	Eat 18903	SFd	R	
722	133	211	‡	9500	9.00/20	11.00/22	Her TDXB	6-4½x5½	474	6.1	364	162-2600	Cla 291V	5	Tim R100	HF	R	5.28-6.83

For references and abbreviations see page 147

For Directory of the Truck Manufacturers listed above, see page 263

1955 TRUCK SPECIFICATIONS—*continued*

MAKE AND MODEL	WHEEL-BASE Minimum Standard	WHEEL-BASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	TRANSMISSION Make and Model	Forward Speeds	REAR AXLE Make and Model	Gear and Type	Drive and Torque	Gear Ratio Range in High
Diamond-T—Cont'd																		
(D) 723	133	211	▲	9600	8.00/20	11.00/22	Cum JBS	6-4½x5	401	16.5	380	150-2300	Cla 292VO	5	Eat 18803	SFd	R	
(T) (D) 723C	99	111	17700	9350	9.00/20	11.00/20	Cum JBS600	6-4½x5	401	16.5	380	150-2500	Cla 292VO	5	Eat 18803	SFd	R	Opt.
(T) 730	133	211	▲	9850	10.00/20	11.00/22	Own XL450	6-4½x5	451	6.5	398	174-2600	Cla 292VO	5	Eat 18803	SFd	R	Opt.
(T) 830	133	211	▲▲	9100	10.00/20	11.00/22	Own XL501	6-4½x5½	501	6.5	430	201-3000	Fu 5A650	5	Eat 18803	SFd	R	Opt.
920	145	211	▫	10600	9.00/20	11.00/22	Con R6572	6-4½x5½	572	6.0	451	195-2600	Spi 6452	5	Tim R100	HF	R	5.28-6.83
(D) 921	145	211	▫	11100	9.00/20	11.00/22	Cum HB620	6-4½x6	672	17.0	500	150-1800	Spi 6453	5	Eat 18803	HFd	R	
(D) 921BR	133	199	▫	12400	9.00/20	11.00/22	Cum HRBB600	6-5½x6	743	16.5	592	190-2000	Fu 10B1120	10	Tim R100	HF	R	4.11-6.83
(D) 921FN	147	213	▫	12350	9.00/20	11.00/22	Cum NHB600	6-5½x6	743	15.5	592	200-2100	Fu 10B1120	10	Tim R100	RF	R	4.11-6.83
(D) 950S	170	224	§§	14000	9.00/20	11.00/24	Cum NHBS600	6-5½x6	743	13.5	710	275-2100	Fu 10B1120	10	Tim U200	2F	R	5.91-7.79
(D) 950RS	170	224	§§	14100	9.00/20	11.00/24	Cum NHRBS600	6-5½x6	743	12.9	668	300-2100	Fu 10B1120	10	Tim U200	2F	R	5.91-7.79
(D) 951	170	224	§§	13900	9.00/20	11.00/24	Bud 6DA844	6-5½x6½	844	14.2	695	215-2100	Fu 10B1120	10	Tim U200	2F	R	5.91-7.79
(D) 951S	170	224	§§	14000	9.00/20	11.00/24	Bu 6DAS844	6-5½x6½	844	12.8	786	280-2100	Fu 10B1120	10	Tim U200	2F	R	5.91-7.79
Divco 11	101		7500	2925	7.00/16	7.50/16	Own	4-3½x4½	162	6.8		47-2800		4		F		
12	101		6000	2965	7.00/16	7.00/16	Own	4-3½x4½	162	6.8		47-2800		3		F		** -6.6
13	101		7300	2940	7.00/16	7.50/16	Own	4-3½x4½	162	6.8		47-2800		4		F		** -6.14
16	101		7600	2995	7.00/16	7.50/16	Own	6-3½x4½	230	6.8		75-2800		4		F		** -6.14
21	127		12000	3662	6.50/20	6.50/20	Own	6-3½x4½	230	6.5		75-2800		4		F		
22	127		8000	3200	7.00/16	7.50/16	Own	6-3½x4½	230	6.5		75-2800		3		F		** -6.14
24	127		7500	3127	7.00/16	7.50/16	Own	4-3½x4½	162	6.2		66-2900		3		F		** -6.6
33	115		10600	3315	6.50/20	7.50/20	Own	6-3½x4½	230	6.5		75-2800		4		F		
34	115		7500	3175	7.00/16	7.50/16	Own	6-3½x4½	230	6.5		75-2800		3		F		** -6.14
36	115		6500	3112	7.00/16	7.00/16	Own	4-3½x4½	162	6.2		66-2900		3		F		** -6.14
37	115		9500	3232	7.50/16	8.25/16	Own	6-3½x4½	230	6.5		75-2800		4		F		
Dodge C-1-B6	108	116	4900	1970	6.00/16S	6.50/16S	Own T-334	6-3½x4½	230	7.3	194	110-3600	Own-D	3	Own T-334	H½	H	3.73-4.78
C-1-B8	108	116	4900	2375	6.00/16S	6.50/16S	Own VT-334	8-3½x4½	241	7.6	215	145-4400	Own-ND	3	Own VT-334	H½	H	3.73-4.78
C-1-C6	116	116	5800	2450	7.00/15S	7.00/15S	Own T-336	6-3½x4½	230	7.3	194	110-3600	NP-89905	3	Own T-336	H½	H	4.1 -4.78
(c.f.) C-1-C6	116	116	6300	2325	7.00/15S	7.00/15S	Own T-336	6-3½x4½	230	7.3	194	110-3600	NP-89905	3	Own T-336	H½	H	4.1 -4.78
C-1-C8	116	116	5800	2500	7.00/15S	7.00/15S	Own VT-336	8-3½x4½	241	7.6	215	145-4400	NP-89905	3	Own VT-336	H½	H	4.1 -4.78
C-1-D6	116	126	8000	2775	6.00/16S*	7.50/17S	Own T-336	6-3½x4½	230	7.3	194	110-3600	NP-89970	3	Own T-336	HyF	H	4.1 -4.89
C-1-D8	116	126	8000	2725	6.00/16S*	7.50/17S	Own VT-336	8-3½x4½	241	7.6	215	145-4400	NP-89970	3	Own VT-336	HyF	H	4.1 -4.89
(c.f.) C-1-D6	116	126	8000	2580	7.00/16S	7.50/17S	Own T-362	6-3½x4½	230	7.3	194	110-3600	NP-89820	3	Own T-362	HyF	H	4.1 -4.89
C-1-DU6	102	117	7900	2815	6.50/16S*	8.25/16S	Own T-164	6-3½x4½	230	7.3	191	103-3600	NP-89490	3	Own T-164	HyF	H	** -4.89
C-1-EU6	142	142	10100	3270	7.50/16S*	9.00/16S	Own T-185	6-3½x4½	230	7.3	191	103-3600	NP-89500	4	Own T-185	HyF	H	** -5.83
C-1-F6	129	153	14000	4000	6.50/20D	7.50/20	Own T-342	6-3½x4½	230	7.3	194	110-3600	NP-89990	4	Own T-342	HyF	H	5.83-6.83
(c.f.) C-1-F6	108	129	14000	3800	6.50/20S	7.50/20	Own T-364	6-3½x4½	230	7.3	194	110-3600	NP-90360	4	Own T-364	HyF	H	5.83-6.83
C-1-G6	129	171	14500	4075	6.50/20D‡	8.25/20	Own TX-342	6-3½x4½	251	7.0	210	120-3600	NP-90360	4	Own TX-342	HyF	H	6.29-6.83
C-1-GA6	129	171	14500	4200	6.50/20D‡	8.25/20	Own TX-342	6-3½x4½	251	7.0	210	120-3600	NP-90360	4	Eat A4-1350	SFd	H	5.83-6.81
C-1-G8	129	171	14500	4125	6.50/20D‡	8.25/20	Own VTX-342	8-3½x3½	241	7.5	220	150-4400	NP-90360	4	Own VTX-312	HyF	H	6.29-6.83
C-1-GA8	129	171	14500	4250	6.50/20D‡	8.25/20	Own VTX-342	8-3½x3½	241	7.5	220	150-4400	NP-90360	4	Eat A4-1350	SFd	H	5.83-6.81
C-1-H6	129	193	16000	4530	7.50/20D	9.00/20	Own T-344	6-3½x4½	251	7.0	210	120-3600	NP-90360	4	Own T-344	HyF	H	6.29-6.83
C-1-HA6	129	193	16000	4625	7.50/20D	9.00/20	Own T-344	6-3½x4½	251	7.0	210	120-3600	NP-90360	4	Eat A5-1350	SFd	H	5.83-6.81
C-1-HM6	108	162	18250	4480	7.50/20D	9.00/20	Own T-356	6-3½x4½	251	7.0	205	112-3600	NP-89980	4	Own T-356	HyF	H	6.29-6.83
C-1-HMA6	108	162	18250	4475	7.50/20D	9.00/20	Own T-356	6-3½x4½	251	7.0	205	112-3600	NP-89980	4	Eat A5-1350	SFd	H	5.83-6.81
C-1-H8	129	193	16000	4555	7.50/20D	9.00/20	Own VT-344	8-3½x4½	241	7.6	210	120-3600	NP-90360	4	Own VT-344	HyF	H	6.29-6.83
C-1-HA8	129	193	16000	4525	7.50/20D	9.00/20	Own VT-344	8-3½x3½	241	7.5	210	150-4400	NP-90360	4	Eat A5-1350	SFd	H	5.83-6.81
C-1-J6	129	171	17500	4525	7.50/20D	9.00/20	Own T-346	6-3½x4.8	265	7.0	225	123-3600	NP-90680	5	Own T-346	HyF	H	6.29-6.83
C-1-JA6	129	171	17500	4725	7.50/20D	9.00/20	Own T-346	6-3½x4.8	265	7.0	225	123-3600	NP-90680	5	Eat A5-1350	SFd	H	5.83-6.81
C-1-JM6	108	162	17750	4775	7.50/20D	9.00/20	Own T-356	6-3½x4.8	265	7.0	216	114-3600	NP-90720	5	Own T-356	HyF	H	6.29-6.83
C-1-JMA6	108	162	17750	4875	7.50/20D	9.00/20	Own T-356	6-3½x4.8	265	7.0	216	114-3600	NP-90720	5	Eat A5-1350	SFd	H	5.83-6.81
C-1-J8	129	171	17500	4768	7.50/20D	9.00/20	Own VT-346	8-3½x3½	241	7.5	220	150-4400	NP-90680	5	Own VT-346	HyF	H	6.29-6.83
C-1-JA8	129	171	17500	4775	7.50/20D	9.00/20	Own VT-346	8-3½x3½	241	7.5	220	150-4400	NP-90680	5	Eat A5-1350	SFd	H	5.83-6.81
C-1-K6	129	171	19000	5580	8.25/20D‡	9.00/20	Own TX-346	6-3½x4.8	265	7.0	228	136*3600	NP-90150	5	Tim H-101	HyF	H	6.8 -7.2
C-1-KA6	129	171	19000	5525	8.25/20D‡	9.00/20	Own TX-346	6-3½x4.8	265	7.0	228	136*3600	NP-90150	5	Eat 16500	SFd	H	6.14-6.94
C-1-KMA6	108	162	19000	5600	8.25/20D‡	9.00/20	Own TX-356	6-3½x4.8	265	7.0	216	114-3600	NP-90280	5	Eat 16500	SFd	H	6.14-6.94
C-1-K8	129	171	19000	5630	8.25/20D‡	9.00/20	Own VTX-346	8-3½x3½	241	7.5	220	150-4400	NP-90150	5	Tim H-101	HyF	H	6.8 -7.2
C-1-KA8	129	171	19000	5625	8.25/20D‡	9.00/20	Own VTX-346	8-3½x3½	241	7.5	220	150-4400	NP-90150	5	Eat 16500	SFd	H	6.14-6.94
C-1-R6	132	174	21000	5540	7.50/20D*	9.00/20	Own VT-348	8-3½x3½	331	7.0	268	153-3600	NP-90040	5	Tim H-100	HyF	H	6.8 -7.2
C-1-RA6	132	174	21000	5445	7.50/20D*	9.00/20	Own VT-348	8-3½x3½	331	7.0	268	153-3600	NP-90040	5	Tim H-300	SFd	H	6.16-6.19
C-1-T6	132	192	22000	7050	8.25/20D‡	10.00/20	Own VT-356	8-3½x3½	331	7.0	294	172-4000	NP-90030	5	Tim L-100	HyF	H	6.8 -7.2
C-1-TA6	132	192	22000	7200	8.25/20D‡	10.00/20	Own VT-356	8-3½x3½	331	7.0	294	172-4000	NP-90030	5	Tim L-300	SFd	H	6.84-6.93
C-1-V6	132	192	24000	7100	9.00/20D†	11.00/20	Own VTX-356	8-3½x3½	331	7.0	294	172-4000	NP-90030	5	Tim Q-100	HyF	H	** -7.6
C-1-VA6	132	192	24000	7300	9.00/20D†	11.00/20	Own VTX-356	8-3½x3½	331	7.0	294	172-4000	NP-90030	5	Tim QT-300	SFd	H	6.63-6.93
C-1-Y6	130	190	28000	8525	9.00/20D†	11.00/20	Own T-362	6-4½x5½	413	6.5	343	171-3200	Cla 292-V2	5	Tim Q-100	HyF	H	6.63-7.4
C-1-YA6	130	190	28000	8525	9.00/20D†	11.00/20	Own T-362	6-4½x5½	413	6.5	343	171-3200	Cla 292-V2	5	Tim R-300A	SFd	H	6.63-6.49
(Sc. Bus) C-1-FS6	153	153	12000	4010	6.50/20D	7.00/20	Own TS-342	6-3½x4½	230	7.3	194	110-3600	NP-89990	4	Own TS-342	HyF	H	5.83-6.83
C-1-HS6	193	193	16000	4735	7.50/20D	8.25/20	Own TS-344	6-3½x4½	251	7.0	210	120-3600	NP-89960	4	Own TS-344	HyF	H	6.29-6.83
C-1-HS6	213	213	17000		7.50/20	8.25/20	Own TS-344	6-3½x4½	251	7.0	210	120-3600	NP-89960	4	Own TS-344	HyF	H	6.29-6.81
C-1-JS6	213	213	17500	5275	7.50/20D	9.00/20	Own TS-346	6-3½x4.8	265	7.0	225	123-3600	NP-90450	4	Own TS-346	HyF	H	6.29-6.83
C-1-RS6	231	231	29000	6100	8.25/20D	9.00/20	Own VTS-348	8-3½x3½	331	7.0	268	153-3600	NP-90040	5	Tim H-100	HyF	H	6.8 -7.2
Duplex T	136	220	20000	6900	8.25/20D	9.00/20	Her JXD	6-4x4¼	320	6.2	240	113-3000	Fu SB320	5	Tim H100	B	H	** -7.20
TH-404	136	220	20000	6900	8.25/20D	9.00/20	Her WXLC-3	6-4¼x4½	404	5.8	312	139-2600	Fu 5A430	5	Tim H-300	DF	H	6.13-6.15
R	136	220	28000	8620	9.00/20D	10.00/20	Her WXLC-3	6-4¼x4½	404	5.8	312	139-2600	Fu 5A43	5	Tim Q300	DF	R	5.42-6.38
SH-529	172	208	28000	9500	10.00/20	11.00/20	Her RXC	6-4¼x5½	529	5.4	395	132-2300	Fu 5A620		Tim Q200	2F	R	** -7.77
L-6602	164	208	37000	11650	11.00/20D	11.00/20	Con R6602	6-4¼x5½	602	6.1	466	200-2600	Fu SC650	5	Tim U200	DF	R	** -9.83
KH	148	220	34000	10500	11.00/20D	11.00/20	Her RXC	6-4¼x5½	529	5.4	395	132-2300	Fu 5A620	5	Tim U-200	2F	R	** -9.83
LH	148	220	37000	11300	11.00/20D	11.00/20	Her RXLD	6-4¼x5½	555	5.4	430	154-2400	Fu SC650	5	Tim U-200	2F	R	** -9.83
RD6-614	144			10900	11.00/20D		Deutz	6-4½x5½	649		424	170-2300	Fu SC650	5	Tim R300			4.77-6.38
Ford Courier																		
Sedan Dlvy.	115½	115½	4800	*3256	6.70/15S	7.10/15S	Own	6-3.62x3.6	223	7.5	114	120-4600	Own	3	Own	H½	H	4.09-4.27
Sedan Dlvy.	115½	115½	4800	*3356	6.70/15S	7.00/15\	Own	6-3.62x3.3	272	7.5	158	162-4400	Own	3	Own	H½	H	4.09-4.27
F-100																		
Cowl	110	110	5000	2296	6.00/16S	6.50/16S	Own	6-3.62x3.6	223	7.5	199	110-3800	Own	3	Own	H½	H	3.92-4.27
Cowl	110	110	5000	2286	6.00/16S	6.50/16S	Own	6-3.5x3.1	236	7.5	216	122-4200	Own	3	Own	H½	H	3.92-4.27
F-250																		
Cowl	118	118	6900	2639	6.50/16S	7.50/17S	Own	6-3.62x3.6	223	7.5	199	110-3800	Own	3	Own	HF	H	** -4.88
Cowl	118	118	6900	2730	6.50/16S	7.50/17S	Own	6-3.5x3.1	236	7.5	216	122-4200	Own	3	Own	HF	H	** -4.88
F-350																		
Cowl††	130	130	9000	3083	7.00/17S	7.50/16D	Own††	6-3.62x3.6	223	7.5	199	110-3800	Own	3	Own	HF	H	5.14-5.83
Cowl	130	130	9000	3183	7.00/17S	7.50/16D	Own	6-3.5x3.1	236	7.5	216	122-4200	Own	3	Own	HF	H	5.14-5.83

For references and abbreviations see page 147

For Directory of the Truck Manufacturers listed above, see page 263

1955 TRUCK SPECIFICATIONS—*continued*

MAKE AND MODEL	WHEEL-BASE		Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES		ENGINE DETAILS						TRANSMISSION		REAR AXLE			
					D-dual rear S-single rear													
	Minimum Standard	Maximum Standard			Standard Front and Rear	Maximum Authorized Tire Size (Duals unless noted)	Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Make and Model	Forward Speeds	Make and Model	Gear and Type	Drive and Torque	Gear Ratio Range in High
Ford—Cont'd																		
F-500																		
Cab	130	154	14000	*4170	6.50/20D	7.50/20	Own	6-3.62x3.6	223	7.5	194	116-3800	Own	4	Own	HF	H	6.2 -6.8
Cab	130	154	14000	*4270	6.50/20D	7.50/20	Own	6-3.5x3.1	239	7.5	215	132-4200	Own	4	Own	HF	H	6.2 -6.8
F-600																		
Cab	130	172	16000	*4700	7.50/20D	8.25/20	Own	6-3.5x3.1	239	7.5	215	132-4200	Own	4	Own	HF	H	6.8 -7.2
Cab	130	172	16000	*4720	7.50/20D	8.25/20	Own	6-3.62x3.1	256	7.5	228	140-3900	Own	4	Own	HF	H	6.8 -7.2
F-700																		
Cab	132	192	19000	*5300	7.50/20D	9.00/20	Own	6-3.62x3.1	256	7.5	228	140-3900	Own	4	Own	HF	H	** -7.2
F-750																		
Cab	132	192	19000	*5630	8.25/20D	9.00/20	Own	6-3.56x3.5	279	7.2	248	152-3800	Own	5	Own	HF	H	** -7.2
F-800																		
Cab	132	192	22000	*6300	9.00/20D	10.00/20	Own	6-3.8x3.5	317	7.2	286	170-3800	Own	5	Own	SF	H	7.17-7.67
F-900																		
Cab	132	192	27000	*6600	10.00/20D	11.00/22	Own	6-3.8x3.5	317	7.2	286	170-3900	Own	5	Own	SF	H	** -7.67
T-700 Tandem																		
Cab	144	192	27000	*7610	7.50/20D	8.25/20	Own	6-3.62x3.1	256	7.5	228	140-3900	Own	5	Own	HF	H	6.70-7.79
Cab	144	192	27000	*7790	7.50/20D	8.25/20	Own	6-3.56x3.5	279	7.2	248	152-3800	Own	5	Own	HF	H	6.79-7.79
T-800 Tandem																		
Cab	144	192	40000	*9640	9.00/20D	10.00/20	Own	6-3.8x3.5	317	7.2	286	170-3900	Own	5	Own	SF	H	7.80-8.60
C-500 C. F.																		
Cab	110	158	14000	*4465	6.50/20D	7.50/20	Own	6-3.5x3.1	239	7.5	215	132-4200	Own	4	Own	HF	H	6.2 -6.8
C-600 C. F.																		
Cab	110	158	16000	*4756	7.50/20D	8.25/20	Own	6-3.5x3.1	239	7.5	215	132-4200	Own	4	Own	HF	H	6.8 -7.2
Cab	110	158	16000	*4775	7.50/20D	8.25/20	Own	6-3.62x3.1	256	7.5	228	140-3900	Own	4	Own	HF	H	6.8 -7.2
C-700 C. F.																		
Cab	110	158	19500	*5600	7.50/20D	9.00/20	Own	6-3.62x3.1	256	7.5	228	140-3900	Own	4	Own	HF	H	** -7.2
C-750 C. F.																		
Cab	116	158	19500	*6038	8.25/20D	9.00/20	Own	6-3.56x3.5	279	7.2	248	152-3800	Own	5	Own	HF	H	** -7.2
C-800 C. F.																		
Cab	116	158	23000	*6438	9.00/20D	10.00/20	Own	6-3.8x3.5	317	7.2	286	170-3800	Own	5	Own	SF	H	7.17-7.67
C-900 C. F.																		
Cab	116	158	27000	*6815	10.00/20	11.00/22*	Own	6-3.8x3.5	317	7.2	286	170-3900	Own	5	Own	SF	H	** -7.67
P-350 Parcel Del. W'S	104	122	7900	3063	7.00/165	7.00/175	Own	6-3.62x3.6	223	7.5	194	116-3800	Own	3	Own	HF	H	** -4.86
P-500 Parcel Del. W'S	130	130	14000	4033	7.00/16*	7.00/20	Own	6-3.62x3.6	223	7.5	194	116-3800	Own	3	Own	HF	H	6.2 -6.8
B-500 School Bus																		
Bus Chassis	154	154	12000	3910	6.50/20D	7.50/20	Own	6-3.62x3.6	223	7.5	194	116-3800	Own	4	Own	HF	H	6.2 -6.8
Bus Chassis	154	154	12000	4016	6.50/20D	7.50/20	Own	6-3.5x3.1	239	7.5	215	132-4200	Own	4	Own	HF	H	6.2 -6.8
B-600 School Bus																		
Bus Chassis	192	192	16000	4520	7.50/20D	8.25/20	Own	6-3.62x3.6	223	7.5	194	116-3800	Own	4	Own	HF	H	6.8 -7.2
Bus Chassis	192	220	*16000	4620	7.50/20D	8.25/20	Own	6-3.5x3.1	239	7.5	215	132-4200	Own	4	Own	HF	H	6.8 -7.2
Bus Chassis	192	220	*16000	4640	7.50/20D	8.25/20	Own	6-3.62x3.1	256	7.5	228	140-3900	Own	4	Own	HF	H	6.8 -7.2
B-700 School Bus																		
Bus Chassis	233	233	19000	5615	7.50/20D	9.00/20	Own	6-3.62x3.1	256	7.5	228	140-3900	Own	4	Own	HF	H	** -7.2
B-750 School Bus																		
Bus Chassis	233	233	20000	5965	8.25/20D	9.00/20	Own	6-3.56x3.5	279	7.2	248	152-3800	Own	5	Own	HF	H	** -7.2
Kenworth (D) ...521	153	256	36000	12500	10.00/20	11.00/22	Cum HRB-600	6-5½x6	743	16.0	540	165-1800	BL 8241	12	Tim U290P	H2F	H	5.91-9.76
...558	153	256	36000	11600	10.00/20	11.00/22	LeR H540	6-4½x4½	540	6.7	480	200-2600	Fu 5C650	15	Tim U290P	H2F	H	5.91-9.76
(D) ...*901	158		73400	37400		†	Cu NHBID-600	6-5½x6	743	16.0	535	200-2100	Fu 10F1220*	10	Own	H2F	R	** -19.2
(D) ...*902	166		94000	45000		††	**	6-5½x6	743	16.0	800	300-2100	‡‡		Own	H2F	R	** -19.2
(D) ...*902-A	166		94000	45000		††	**	6-5½x6	743	16.0	800	300-2100	Fu 10F1220	10	Own	H2F	R	** -19.2
Peterbilt (D) ...280	175	Opt	27000	12990	10.00/20D	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim R-230DPA	2F	R	5.91-6.51
...280 (cos	114	Opt	27000		10.00/20	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim R-230DPA	2F	R	5.91-6.51
...281	165	Opt	27000	10490	10.00/20	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim R-230P	2F	R	5.91-6.51
Reo ...F-20-1	125	185	16000	4575	7.50/20	8.25/20	Own 256‡	6-3½x4½	255	6.7	189	107-3400	WG-T98	4	Tim E-100+	HF	H	6.2-6.8
...F-20-2	125	185	17000	4675	7.50/20	8.25/20	Own 256‡	6-3½x4½	255	6.7	189	107-3400	WG-T98	4	Tim E-100+	HF	H	6.2-6.8
...F-20-3	125	185	18000	4805	7.50/20	9.00/20	Own 256‡	6-3½x4½	255	6.7	189	107-3400	WG-T98	4	Tim E-100+	HF	H	6.2-6.8
...F-20-4	125	185	19500	5155	8.25/20	9.00/20	Own 256‡	6-3½x4½	255	6.7	189	107-3400	WG-T98	4	Tim H-100+	HF	H	6.16-6.18
...F-20T	125	125	16000	5115	8.25/20	9.00/20	Own 256‡	6-3½x4½	255	6.7	189	107-3400	WG-T98	4	Tim E-300	HFd	H	6.13-6.16
...F-22-1	130	185	20000	5790	9.00/20	10.00/20	Own 292‡	6-3½x4½	292	6.5	224	124-3300	Cla 205V	5	Tim H-100+	HF	H	6.16-6.8
...F-22-2	130	185	21000	5790	9.00/20	10.00/20	Own 292‡	6-3½x4½	292	6.5	224	124-3300	Cla 205V	5	Tim H-100+	HF	H	6.16-6.8
...F-22-3	130	185	21000	5815	9.00/20	10.00/20	Own 292‡	6-3½x4½	292	6.5	224	124-3300	Cla 205V	5	Tim H-100+	HF	H	6.16-6.8
...F-22T	130	130	20000	6175	9.00/20	10.00/20	Own 292‡	6-3½x4½	292	6.5	224	124-3300	Cla 205V	5	Tim H-300+	HFd	H	6.67-6.85
...F-22R-1	130	185	23000	8230	10.00/20	10.00/22	Own 331‡	6-4½x4½	331	6.4	284	140-3200	Cla 205V	5	Tim L-100+	HF	H	6.16-7.4
...F-22R-2	130	185	24000	8230	10.00/20	10.00/22	Own 331‡	6-4½x4½	331	6.4	284	140-3200	Cla 205V	5	Tim L-100+	HF	H	6.16-7.4
...F-22R-3	130	185	24000	8500	10.00/20	10.00/22	Own 331‡	6-4½x4½	331	6.4	284	140-3200	Cla 205V	5	Tim L-100+	HF	H	6.16-7.4
...F-22RT	130	130	22000	6705	10.00/20	10.00/22	Own 331‡	6-4½x4½	331	6.4	284	140-3200	Cla 205V	5	Tim L-300+	HFd	H	6.36-6.28
...F-50-1	130	185	28000	7090	10.00/20	11.00/22	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 265V	5	Tim Q-100	HF	H	6.16-6.83
...F-50-2	130	185	30000	7090	10.00/20	11.00/22	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 265V	5	Tim Q-100	HF	H	6.16-6.83
...F-50-3	130	185	30000	7160	10.00/20	11.00/22	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 265V	5	Tim Q-100	HF	H	6.16-6.83
...F-50-T	130	130	28000	7450	10.00/20	11.00/22	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 265V	5	Tim QT-300	HFd	H	6.36-6.61
...F-23-1	130	185	28000	7390	10.00/20	11.00/22	Con T6427	6-4½x4½	427	6.4	348	163-2800	Cla 290V	5	Tim Q-100+	HF	H	6.16-6.83
...F-23-2Q	130	185	30000	7390	10.00/20	11.00/22	Con T6427	6-4½x4½	427	6.4	348	163-2800	Cla 290V	5	Tim Q-100+	HF	H	6.16-6.83
...F-23-2R	130	185	32000	7640	10.00/20	11.00/22	Con T6427	6-4½x4½	427	6.4	348	163-2800	Cla 290V	5	Tim R-100+	HF	H	7.4-
...F-23-3	130	185	30000	7460	10.00/20	11.00/22	Con T6427	6-4½x4½	427	6.4	348	163-2800	Cla 290V	5	Tim Q-100+	HF	H	6.16-6.83
...F-23T	130	130	28000	7750	10.00/20	11.00/22	Con T6427	6-4½x4½	427	6.4	348	163-2800	Cla 290V	5	Tim Q-300+	HFd	H	6.42-6.38
...F-23D-1	130	185	28000	8060	10.00/20	11.00/22	Cum JBS600*	6-4½x5	401	15.0	360	150-2500	Cla 292VO	5	Tim Q-100*	HF	H	6.16-6.83
...F-23D-2Q	130	185	30000	8060	10.00/20	11.00/22	Cum JBS600*	6-4½x5	401	15.0	360	150-2500	Cla 292VO	5	Tim Q-100*	HF	H	6.16-6.83
...F-23C-2R	130	185	33000	8315	10.00/20	11.00/22	Cum JBS600*	6-4½x5	401	15.0	360	150-2500	Cla 292VO	5	Tim R-100*	HF	H	7.4-
...F-23D-3	130	185	30000	8130	10.00/20	11.00/22	Cum JBS600*	6-4½x5	401	15.0	360	150-2500	Cla 292VO	5	Tim Q-100*	HF	H	6.16-6.83
...F-23DT	130	130	28000	8420	10.00/20	11.00/22	Cum JBS600	6-4½x5	401	15.0	360	150-2500	Cla 292VO	5	Tim QT-300	HFd	H	6.82-7.00
...A-600	139	187	25000	8155	10.00/20	11.00/22	Own OV-195*	6-3½x4½	390	7.3	345	195-3200	Spi 6352	5	Tim Q-100*	HF	H	6.16-6.83
...A-601	139	187	28000	8155	10.00/20	11.00/22	Own OV-195*	6-3½x4½	390	7.3	345	195-3200	Spi 6352	5	Tim Q-100*	HF	H	6.16-6.83
...A-602	139	187	30000	8170	10.00/20	11.00/22	Own OV-195*	6-3½x4½	390	7.3	345	195-3200	Spi 6352	5	Tim Q-100*	HF	H	6.16-6.83
...A-603	133	151	28000	8620	10.00/20	11.00/22	Own OV-195*	6-3½x4½	390	7.3	345	195-3200	Spi 6352	5	Tim QT-300	HFd	H	6.63-6.51
...A-607	151	187	28000	7680	9.00/20	10.00/20	Own OV-220*	6-3½x4½	390	7.3	345	220-3400	Spi 6352	5	Tim L-100*	HF	H	6.16-7.2
...A-700	139	187	36000	8255	10.00/20	11.00/22	Own OV-195*	6-3½x4½	390	7.3	345	195-3200	Spi 6352	5	Tim R-100*	HF	H	6.16-7.4

For references and abbreviations see page 147

For Directory of the Truck Manufacturers listed above, see page 263

1955 TRUCK SPECIFICATIONS—*continued*

MAKE AND MODEL	WHEEL-BASE		Gross Vehicle Weight for Normal Service	Chassis Weight (less distribution)	TIRE SIZES (D-dual rear S-single rear)		ENGINE DETAILS						TRANSMISSION		REAR AXLE			
	Minimum Standard	Maximum Standard			Standard Front and Rear	Maximum Authorized Tire Size (Duals unless noted)	Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Make and Model	Forward Speeds	Make and Model	Gear and Type	Drive and Torque	Gear Ratio Range in High
Reo—Cont'd A-701	139	167	32000	8256	10.00/20	11.00/22	Own OV-195*	6-3⅞x4½	380	7.3	345	195-3200	Spi 6352	5	Tim R-100^	HF	H	6.16-7.4
A-702	139	167	32000	8270	10.00/20	11.00/22	Own OV-195*	6-3⅞x4½	380	7.3	345	195-3200	Spi 6352	5	Tim R-100^	HF	H	6.16-7.4
A-703	133	151	30000	8080	10.00/20	11.00/22	Own OV-165*	6-3⅞x4½	380	7.3	345	165-3200	Spi 6352	5	Tim R-300	HFd	H	6.99-8.38
School bus F-129L	185	185	18000	5417	7.50/20	9.00/20	Own 256‡	6-3½x4½	259	6.7	189	107-3400	WG-T98	4	Tim E-109+	HF	H	** -6.8
F-129G	206½	206½	18000	5600	7.50/20	9.00/20	Own 256‡	6-3½x4½	259	6.7	189	107-3400	WG-T98	4	Tim E-109+	HF	H	** -6.8
F-129H	224½	224½	19000	5998	8.25/20	9.00/20	Own 256‡	6-3½x4½	259	6.7	189	107-3400	WG-T98	4	Tim E-109+	HF	H	** -6.8
F-120J	251½	251½	20500	6340	8.25/20	9.00/20	Own 256‡	6-3½x4½	259	6.7	189	107-3400	WG-T98	4	Tim E-109+	HF	H	6.16-6.8
F-122H	224½	224½	21000	6375	8.25/20	10.00/20	Own 292▲	6-3⅞x4½	292	6.5	224	124-3300	Cla 231F	4	Tim H-100	HF	H	6.8-7.2
F-122J	251½	251½	21000	6615	8.25/20	10.00/20	Own 292▲	6-3⅞x4½	292	6.5	224	124-3300	Cla 231F	4	Tim H-100	HF	H	6.8-7.2
Studebaker E5	112	112	4800	2965	6.00/16S	6.50/16S	Own 1E	6-3x4½	186	7.8	152	92-3600	Own	3	Own	H½	H	4.09-4.55
E6	112	112	4800	2275	6.00/16S	6.50/16S	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	3	Own	H½	H	4.09-4.55
E7	112	112	4800	2365	6.00/16S	6.50/16S	Own 2E	6-3⅛x2⅝‖	224	7.8	202	140-4500	Own	3	Own	H½	H	4.09-4.55
E10	122	122	6100	2350	6.50/16S	7.50/16S	Own 1E	6-3x4½	186	7.8	152	92-3600	Own	3	Own	SF	H	4.55-5.57
E11	122	122	6300	2560	6.50/16S	7.50/16S	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	3	Own	SF	H	4.11-5.57
E12	122	122	6300	2650	6.50/16S	7.50/16S	Own 2E	6-3⅛x2⅝‖	224	7.8	202	140-4500	Own	3	Own	SF	H	4.11-5.57
E13-21	121	121	7800	3110	7.00/17S	7.50/16	Own 2E	6-3⅛x2⅝‖	224	7.8	202	140-4500	Own	4	Own	HF	H	5.14-5.83
E13-31	131	131	9500	3170	7.00/17S	7.50/16	Own 2E	6-3⅛x2⅝‖	224	7.8	202	140-4500	Own	4	Own	HF	H	5.14-5.83
E14-21	121	121	7800	3020	7.00/17S	7.50/16	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	4	Own	HF	H	5.14-5.83
E14-31	131	131	9500	3080	7.00/17S	7.50/16	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	4	Own	HF	H	5.14-5.83
E15-21	121	121	7800	3110	7.00/17S	7.50/16	Own 1E	6-3x4½	186	7.8	152	92-3600	Own	4	Own	HF	H	5.14-5.83
E16-31	131	131	9300	2870	7.00/17S	7.50/16	Own 1E	6-3x4½	186	7.8	152	92-3600	Own	4	Own	HF	H	5.14-5.83
E16	131	212	14000	3770	7.50/20D	8.25/20	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	4	Own^^	SF	H	5.14-5.98
E16B	131	212	15000	3875	7.50/20D	8.25/20	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	4	Own^^	SF	H	5.14-5.98
E17	131	212	16000	4290	7.50/20‡	9.00/20	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	4	Own^	HF	H	6.20-6.98
E17B	131	212	18000	4230	7.50/20‡	9.00/20	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	4	Own^	HF	H	6.20-6.98
E28	131	212	14000	3865	7.50/20D	8.25/20	Own 3E	6-3⅛x3½	259	7.8	236	156-4500	Own	4	Own^^	SF	H	5.14-5.98
E28B	131	212	15000	3970	7.50/20D	8.25/20	Own 3E	6-3⅛x3½	259	7.8	236	156-4500	Own	4	Own^^	SF	H	5.14-5.98
E38	131	212	16000	4295	7.50/20‡	9.00/20	Own 6E	6-3⅛x3½	259	7.5	250	175-4500	Own	4	Own^	HF	H	6.20-6.98
E38B	131	212	18000	4325	7.50/20‡	9.00/20	Own 6E	6-3⅛x3½	259	7.5	250	175-4500	Own	4	Own^	HF	H	6.20-6.98
Sch. Bus Ch. E17	212	212	17000	4710	7.50/20‡	9.00/20	Own 4E	6-3⅛x4⅝	246	7.8	204	106-3400	Own	4	Own^	HF	H	6.20-6.98
Sch. Bus Ch. E38	212	212	17000	4805	7.50/20‡	9.00/20	Own 6E	6-3⅛x3½	259	7.5	250	175-4500	Own	4	Own^	HF	H	6.20-6.98
Ward La Fr. D-1	149	220	25000	^9500	10.00/20	11.00/20	Con T6427	6-4⅛x4½	427	5.1	340	152-2600	Ful 5A430	5	Tim Q-100	R	R	** -6.83
D-1C	149	220	29000	^9500	11.00/20	11.00/22	Con T6427	6-4⅛x4½	427	5.1	340	152-2600	Ful 5A430	5	Tim U-200	S2	R	** -7.06
D-3	149	220	29000	^10000	11.00/20	11.00/22	Con R6572	6-4⅝x5½	572	5.9	440	189-2600	Ful 5C650	5	Tim R-200	S2	R	** -7.84
D-3S	149	220	29000	^10000	11.00/20	11.00/22	Con R6602	6-4⅞x5½	602	5.9	463	198-2600	Ful 5C650	5	Tim R-200	S2	R	** -7.84
(D) D-5	149	220	35000	^12500	11.00/22	11.00/22	Cum HB600	6-4⅞x6	672	17.0	500	150-1900	Ful 5C650	5	Tim R-200	S2	R	** -6.42
White-Freightliner (c.o.e.) WF-42	114	120	.....	^11300	10.00/22	.....	Cum NH8	6-5½x6	743	13.0	575	290-2100	Fu 4A86	8	Tim R-330	SFd	H	4.33-6.67
Four-Wheel-Drive																		
Autocar C8564	170	170	45000	^14075	10.00/20	11.00/20	Wh 390A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Tim SQD	2HF	L	5.79-9.21
(T) C8564T	158	158	70000	^13500	10.00/20	10.00/22	Wh 390A	6-4½x5	531	6.4	440	200-2900	Spi 6453	5	Tim SLDD	2HF	L	5.90-8.43
CL8564	170	170	45000	^14050	10.00/20	11.00/20	LeR T-H540	6-4⅛x4½	540	6.7	460	207-3000	Spi 6453	5	Tim SQD	2HF	L	5.79-9.21
(T) CL8564T	158	158	70000	^13475	10.00/20	10.00/22	LeR T-H540	6-4⅛x4½	540	6.7	460	207-3000	Spi 6453	5	Tim SLDD	2HF	L	5.90-8.43
CL8464	161	229	45000	^14200	10.00/20	11.00/22	LeR T-H540	6-4⅛x4½	540	6.7	460	207-3000	Spi 6041†	4	Tim SQW	WF	L	4.71-9.25
CL10364S	170	170	62000	^17125	11.00/20	12.00/24	LeR T-H540	6-4⅛x4½	540	6.7	460	207-3000	Spi 6241†	4	Tim SFD4800	2HF	L	6.07-11.56
(D) DC7564	169	169	45000	^15800	10.00/20	11.00/20	Cum HRB600	6-5½x6	743	15.5	537	168-1800	Fu 5C720†	5	Tim SQD	2HF	L	5.79-9.21
(D) DC10264	235	235	45000	^16000	10.00/20	11.00/22	Cum HRB600	6-5½x6	743	15.5	537	168-1800	Spi 6041†	4	Tim SQW	WF	L	4.71-9.25
(D) DC10364S	171	255	62000	^19500	11.00/24	12.00/24	Cum HRB600	6-5½x6	743	15.5	537	168-1800	Spi 6041†	4	Tim SFD4800	2HF	L	6.07-11.56
Biederman PM62	162	162	40000	15040	10.00/20D	11.00/20	Cum NHB600	6-5½x6	743	16.5	535	200-2100	Fu R9500	10	Tim SW3458P	WF	L	** -8.17
Coleman G-55	150	160	34000	12000	11.00/20	12.00/20	BudaRLO-525	6-4½x5½	525	6.7	400	150-2200	Fu 5A650	5	OW-295-CM	2	...	** -9.72
G-56	150	160	34000	12000	11.00/20	12.00/20	Wau 140GZ	6-4½x5½	554	6.4	451	188-2600	Fu 4A86	4	OW-295-CM	2	...	** -9.72
(D) D-58	150	160	34000	13000	11.00/20	12.00/20	Cum HB400	6-4⅞x6	672	17.0	500	150-1900	Fu 5A650	5	OW-295-CM	2	...	** -9.72
Diamond T 422-22W	154	190	++	9500	7.50/20	9.00/20	Con K8271	6-3⅞x4½	271	6.8	210	112-3000	Cla 206V	5	Eat 22M	HF	R	Opt
920-SW3456	187	241	(o)	14000	9.00/20	11.00/20	Con R6572	6-4⅝x5½	572	5.9	401	195-2000	.....	15	Tim SW3456	WF	R	Opt
(D) 921N-SW456	169	241	"	16300	9.00/20	11.00/22	Cum NHB600	6-5½x6	743	16.5	537	200-2100	Fu 10B1120	10	Tim SW456	WF	R	Opt
(D) 950RS-SFDD4800	194	254	"	19400	9.00/20	12.00/24	Cum NHRB3600	6-5½x6	743	12.0	606	206-2100	Fu 10B1120	10	Tim SFDD4800	2F	R	Opt
Dodge C-1-PW5	129	129	9500	3850	7.50/16S	9.00/16S	Own T-137	6-3⅞x4½	230	7.3	101	103-3600	NP-80909	4	Own T-137	HyF	H	4.88-5.83
FWD LD	136	184	14000	^5500	6.50/20D	9.00/20	Her CBQXLD	6-3⅞x4½	236	6.7	190	97-3200	WG T9A	6	Tim 8364T	SF	H	** -6.67
140	142	Opt	14500	^6250	7.50/20D	10.00/20S	Int SD240	6-3⅞x4.62	240	7.0	208	131-3600	WG T9A	6	Own 13B	SF	H	** -6.17
HA	132	168	17000	^7545	8.25/20D	10.00/20S	Wau 195GKA	6-4⅛x4	320	6.2	245	125-3200	Own H	6	Own H	SF	H	4.88-6.98
171	154	Opt	17500	^6800	8.25/20D	10.00/20S	Int SD282	6-3⅞x4½	282	6.8	251	137-3600	Int F51C	5	Own 13C	SF	H	5.86-10.49
229	144	Opt	22000	^8000	9.00/20D	10.00/20S	Wau 195GKA	6-4⅛x4	320	6.2	245	125-3200	Own 23	6	Own 23	SF	H	4.88-6.98
222	154	Opt	22000	^7850	9.00/20D	10.00/20S	Int SD268	6-3⅞x4½	306	6.8	273	145-3600	Int F51C	5	Own 23	SF	H	4.88-6.98
(D) 223D	154	Opt	22000	^8685	9.00/20D	10.00/20S	GMC 3-71	3-4½x5	213	16.0	300	100-2000	Fu 5A430	5	Own 23	SF	H	4.88-6.98
HGY	154	154	25000	^6400	10.00/20D	10.00/29	Wau 2MZA	6-4½x5½	404	5.6	291	130-3000	Own H	6	Own Hy	SF	H	4.88-6.98
M282	154	Opt	26000	^9000	10.00/20D	10.00/29	Wau 135GKB	6-4⅛x5	426	6.3	327	149-2800	Own 25	6	Own 23	SF	H	4.88-6.98
284	154	Opt	26000	^9450	10.00/20D	10.00/29	Int RD 372	6-4⅝x4½	372	6.8	308	165-3200	Fu 5A43	5	Own 23	SF	H	4.88-6.98
(D) 264D	154	Opt	26000	^8230	10.00/20D	10.00/29	GMC 4-71	4-4½x5	284	16.0	365	150-2100	Fu 5C650	5	Own 23	SF	H	4.88-6.98
M264	154	Opt	26000	^9500	10.00/20D	10.00/29	Int RD372	6-4⅝x4½	372	6.8	308	165-3200	Fu 5A43	5	Own 23	SF	H	4.88-6.98
(D) M264D	161	Opt	26000	^9230	10.00/20D	10.00/29	GMC 4-71	4-4½x5	284	16.0	365	150-2100	Fu 5C650	5	Own 23	SF	H	4.88-6.98
286	154	Opt	29000	^10700	11.00/20D	13.00/20S	Int RD406	6-4⅝x4½	406	6.8	329	179-3200	Fu 5A62	5	Own 23A	SF	H	4.88-6.98
5U	150	162	28000	^10570	11.00/20D	13.00/20S	Wau 5RKR	6-4⅛x5½	617	5.5	509	226-2400	Own 5U	5	Own 5U	SF	H	4.46-6.91
YU	150	162	30000	^11570	11.00/20D	13.00/20S	Wau 140GK	6-4⅛x5½	525	6.2	425	142-2250	Own 5	5	Own YU	SF	H	4.16-12.16
*YU	160	162	30000	^11570	11.00/20S	14.00/20S	Wau 140GK	6-4⅛x5½	525	6.2	425	142-2250	Own 5	5	Own YU	SF	H	4.16-12.16
323	150	Opt	32000	^12000	11.00/20D	13.00/20S	Wau 135GZB	6-4⅛x5	461	6.3	384	183-2800	Own 35	5	Own 33	SF	H	4.86-14.13
326	154	Opt	32000	^11715	11.00/20D	13.00/20S	Int RD450	6-4⅝x5	461	6.2	367	182-3000	Fu 5A62	5	Own 33A	SF	H	4.16-12.16
(D) 324D	150	Opt	32000	^12350	11.00/20D	13.00/20S	GMC 4-71	4-4½x5	284	16.0	365	150-2100	Own 35	5	Own 33	SF	H	4.86-14.13
(D) 324D	154	Opt	32000	^12495	11.00/20D	13.00/20S	GMC 4-71	4-4½x5	284	16.0	365	150-2100	Fu 5C650	5	Own 33A	SF	H	4.16-12.16
(D) 327D	176	Opt	32000	^13295	11.00/20D	13.00/20S	Cum HRB	6-5½x6	743	15.5	540	168-1800	Fu 5C720	5	Own 33A	SF	H	4.16-12.16
ZU	150	162	34000	^12540	11.00/20D	14.00/20S	Wau 140GZB	6-4⅛x5½	554	6.4	460	188-2600	Own 5	5	Own ZU	SF	H	4.86-14.13
(D) ZUD	150	162	34000	^13370	11.00/20D	14.00/20S	GMC 6-71	6-4⅛x5	426	16.0	600	200-2000	Own 5	5	Own ZU	SF	H	4.86-14.13
366	150	Opt	36000	^12600	11.00/20D	13.00/20S	Wau 140GZB	6-4⅛x5½	554	6.4	460	188-2600	Own 35	5	Own 33	SF	H	4.86-14.13
367	154	Opt	36000	^12965	11.00/20D	13.00/20S	Int RD501	6-4⅞x5½	501	6.5	444	212-3000	Fu 5C65	5	Own 33	SF	H	4.86-14.13
(D) 336D	176	Opt	36000	^13680	11.00/20D	13.00/20S	Cum HRB	6-5½x6	743	15.5	540	168-1800	Fu 5C720	5	Own 33	SF	H	4.86-14.13
M7G	150	160	40000	^15300	12.00/20D	14.00/20S	Wau 145GK	6-5½x6	779	6.2	590	188-2000	Own M	10	TW 1750W	2F	H	6.5-12.0
408	154	Opt	40000	^13600	12.00/20D	14.00/20S	Wau 145GK	6-5½x6	779	6.2	590	216-2000	Fu 10A1120	10	Own 33	SF	H	6.71-8.88

For references and abbreviations see page 147

For Directory of the Truck Manufacturers listed above, see page 263

1955 TRUCK SPECIFICATIONS—*continued*

MAKE AND MODEL	WHEEL-BASE				TIRE SIZES		ENGINE DETAILS						TRANSMISSION		REAR AXLE			
	Minimum Standard	Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	D-dual rear S-single rear		Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Make and Model	Forward Speeds	Make and Model	Gear and Type	Drive and Torque	Gear Ratio Range in High
					Standard Front and Rear	Maximum Permitted Tire Size (Dual unless noted)												
Four-Wheel—Cont'd																		
FWD—Cont'd 409	154	Opt	40000	*15000	12.00/20D	14.00/20S	Wau 145GKB	6-5½x6	779	6.2	895	240-2400	Fu 10A1120	10	Own 33	SF	H	5.71-8.53
(D) 409D	154	Opt	40000	*14400	12.00/20D	14.00/20S	GMC 6-71	6-4½x5	426	16.0	600	200-2000	Fu 10A1120	10	Own 33	SF	H	5.71-8.53
(D) 409D	154	Opt	40000	*14570	12.00/20D	14.00/20S	Cum NH6	6-5½x6	743	15.8	535	200-2100	Fu 10A1120	10	Own 33	SF	H	5.71-8.53
M10G	150	180	44000	*15800	12.00/20D	14.00/20S	Wau 145GK	6-5½x6	779	6.2	880	186-2000	Own M	10	TW 79721	2F	H	6.7-9.2
Marmon-Herr. M104	110		5300	2650	6.50/16S	6.50/16	Ford	6-3½x3.1	239	7.5	215	132-4200	Ford	4	Ford	Hy	H	** -4.27
6M104	110		5300	2850	6.50/16S	6.50/16	Ford	6-3.62x3.6	223	7.5	195	116-3200	Ford	4	Ford	Hy	H	** -4.27
M254	110		8000	4200	7.50/17S	7.50/17	Ford	6-3½x3.1	239	7.5	215	132-4200	Ford	8	Ford	Hy	H	** -4.86
6M254	110		8000	4200	7.50/17S	7.50/17	Ford	6-3.62x3.6	223	7.5	195	116-3200	Ford	8	Ford	Hy	H	** -4.86
M354	130		10200	4300	7.50/17S	7.50/17	Ford	6-3½x3.1	239	7.5	215	132-4200	Ford	8	Ford	Hy	H	** -5.83
6M354	130		10200	4300	7.50/17S	7.50/17	Ford	6-3.62x3.6	223	7.5	195	116-3200	Ford	8	Ford	Hy	H	** -5.83
M504	130	154	15500	5300	7.50/20D	8.25/20	Ford	6-3½x3.1	239	7.5	215	132-4200	Ford	8	Ford	Hy	H	** -6.8
6M504	130	154	15500	5700	7.50/20D	8.25/20	Ford	6-3.62x3.6	223	7.5	193	115-3800	Ford	8	Ford	Hy	H	** -6.8
CM504	110	158	15500	6000	7.50/20D	8.25/20	Ford	6-3½x3.1	239	7.5	215	132-4200	Ford	8	Ford	Hy	H	** -6.8
6PM504	130		15500	6100	7.50/20S	8.25/20	Ford	6-3.62x3.6	223	7.5	194	116-3800	Ford	8	Ford	Hy	H	** -6.8
BM504	154		15500	6157	7.50/20D	8.25/20	Ford	6-3½x3.1	239	7.5	215	132-4200	Ford	8	Ford	Hy	H	** -6.8
6BM504	154		15500	6295	7.50/20D	8.25/20	Ford	6-3.56x3.6	223	7.5	193	101-3500	Ford	8	Ford	Hy	H	** -6.8
M604	130	172	17000	5300	7.50/20D	8.25/20	Ford	6-3.62x3.1	256	7.5	228	140-3900	Ford	8	Ford	Hy	H	** -6.8
BM604	192	220	17000	6561	7.50/20D	8.25/20	Ford	6-3.62x3.1	256	7.5	228	138-3900	Ford	8	Ford	Hy	H	** -6.8
CM604	110	158	17000	5650	7.50/20D	8.25/20	Ford	6-3.62x3.1	256	7.5	228	140-3900	Ford	8	Ford	Hy	H	** -6.8
M704	132	182	21500	6800	8.25/20	9.00/20	Ford	6-3.62x3.1	256	7.5	228	140-3900	Ford	8	Ford	Hy	H	** -7.20
CM704	132	156	21500	7400	8.25/20	9.00/20	Ford	6-3.62x3.1	256	7.2	228	140-3900	Ford	8	Ford	Hy	H	** -7.20
BM704	233	233	21500	7250	8.25/20	9.00/20	Ford	6-3.62x3.1	256	7.2	228	138-3900	Ford	8	Ford	Hy	H	** -7.20
M754	132	182	21500	7550	8.25/20D	10.00/20	Ford	6-3.56x3.5	279	7.2	246	152-3800	Ford	10	Ford	Hy	H	** -7.2
CM754	132	156	21500	7600	8.25/20D	10.00/20	Ford	6-3.56x3.5	279	7.2	246	152-3800	Ford	10	Ford	Hy	H	** -7.2
BM754	233		21500	7150	9.00/20D	10.00/20	Ford	6-3.56x3.5	279	7.2	246	152-3800	Ford	10	Ford	Hy	H	** -7.2
M804	132	192	24000	7910	10.00/20D	10.00/20	Ford	6-3.8x3.5	317	7.2	286	170-3900	Ford	10	Ford	SB	H	** -7.17
CM804	132	156	24000	7900	10.00/20D	10.00/20	Ford	6-3.8x3.5	317	7.2	286	170-3900	Ford	10	Ford	SB	H	** -7.17
M904	132	192	26000	8210	10.00/20D	11.00/20	Ford	6-3.8x3.5	317	7.2	286	170-3900	Ford	10	Ford	SB	H	** -7.17
CM804	132	156	26000	7780	10.00/20	11.00/20	Ford	6-3.8x3½	317	7.2	286	170-3900	Ford	10	Ford	Hy	H	** -7.17
MH-610	159	193	24000	9547	10.00/20D	11.00/20	Her WXLC3	6-4½x4½	404	6.5	312	139-2600	MH610	10	MH610A	HyF	H	** -6.80
MH-615	159	193	26000	*10158	10.00/20D	11.00/20	Her WXLC3	6-4½x4½	404	6.5	312	139-2600	MH615	10	MH615A	2S	H	** -8.43
MH-620	159	193	28000	*10615	10.00/20D	11.00/20	Her RXLC	6-4½x5½	529	6.0	408	146-2400	MH620	10	MH620A	2S	H	** -8.43
MH-625	159	193	30000	*11511	11.00/20D	12.00/20	Her RXLC	6-4½x5½	529	6.0	408	146-2400	MH625	10	MH625	2S	H	** -8.99
MH-630	159	193	32000	*11711	11.00/20D	12.00/20	Her RXLDH	6-4½x5½	550	6.0	440	180-2600	MH630	10	MH630	2SF	H	** -6.59
NAPCO Power-Pak																		
(C) 3653	120		6800	3360	6.00/16	7.50/17	C-Thrift-Mas	6-3½x3½	236	7.5	200	112-3700	Chev.	8	Chev.	HyF	H	** -4.57
(C) 4153	137		15700	4845	6.50/20D	7.50/20D	C-Load-Mas	6-3½x3½	236	7.5	200	112-3700	Chev.	8	Chev.	HyF	H	** -6.17
(C) 4453	161		15700	5095	6.50/20D	7.50/20D	C-Load-Mas	6-3½x3½	236	7.5	2 0	112-3700	Chev.	8	Chev.	HyF	H	** -6.17
(C) 6153	137		17700	5190	7.50/20D	8.25/20D	C-Job-Mas	6-3½x3½	261	7.2	220	135-4000	Chev.	8	Chev.	HyF	H	** -6.17
(C) 6453	161		17700	5315	7.50/20D	8.25/20D	C-Job-Mas	6-3½x3½	261	7.2	220	135-4000	Chev.	8	Chev.	HyF	H	** -6.17
(C) 6553	179		17700	5425	7.50/20D	8.25/20D	C-Job-Mas	6-3½x3½	261	7.2	220	135-4000	Chev.	8	Chev.	HyF	H	** -6.17
(C) 5453	134		17700	5225	7.50/20D	8.25/20D	C-Job-Mas	6-3½x3½	261	7.2	220	135-4000	Chev.	8	Chev.	HyF	H	** -6.17
(C) 6753	166		17700	5360	7.50/20D	8.25/20D	C-Job-Mas	6-3½x3½	261	7.2	220	135-4000	Chev.	8	Chev.	HyF	H	** -6.17
Oshkosh W-214	150	205	22000	9025	9.00/20D	9.00/20	Con B6427	6-4½x4½	427		328	137-2600	Own W-214	5	Own W-214		H	** -8.2
W-314	150	205	26000	*9650	10.00/20D	10.00/20	Con B6427	6-4½x4½	427		328	137-2600	Own W-314	5	Own W314	HF	H	** -8.2
W-414	150	205	28000	*10150	10.00/20D	10.00/20	Con T6427	6-4½x4½	427		342	157-2600	Own W-414	5	Own W414	HF	H	** -8.2
W-1700	150	205	30000	*11200	11.00/20D	12.00/20S	Her RXC	6-4½x5½	529		410	145-2200	Own W-1700	5	Own W1700	SF	H	** -8.4
W-1700-16-C	150‖		32000	12300	11.00/20D	12.00/20	Con R6513	6-4½x5½	513		427	190-2600	O. W1700-15	10	Own W1700-15	SF	H	** -7.15
W-1700-15-CR	150‖		32000	12300	11.00/20D	12.00/20	Con R-6513	6-4½x5½	513		427	190-2600	O. W1700-15	10	Own W1700-15	SF	H	** -7.27
W-614	150	205	32000	12200	11.00/20D	12.00/20	Con R6513	6-4½x5½	513		427	190-2600	Own W-614	5	Own W-614	SF	H	** -7.1
(D) W-715	150	205	36000	14000	12.00/20D	12.00/20	Cum 6H6	6-5½x6	672		500	150-1800	Cum W-715	5	Own W-715	2F	H	** -7.2
W-814	150	205	36000	12600	11.00/20D	12.00/20	Con R6572	6-4½x5½	572		484	210-2800	Own W-814	5	Own W-814	SF	H	** -7.1
W-815	150	205	36000	12600	11.00/20D	12.00/20	Con R6602	6-4½x5½	602		484	210-2600	Own W-815	5	Own W-815	SF	H	** -7.1
W-824	150	205	36000	12800	11.00/20D	12.00/20	Con R6572	6-4½x5½	572		484	210-2600	Own W-824	5	Own W-824	2F	H	** -7.2
W-825	150	205	36000	12900	11.00/20D	12.00/20	Con R6602	6-4½x5½	602		484	210-2600	Own W-825	5	Own W-825	2F	H	** -7.2
W-816	150	205	36000	14100	12.00/20D	12.00/20	Cum HB600	6-5½x6	672		500	150-2000	Own W816	5	Own W816	SF	H	** -5.6
W-826	150	205	36000	14300	12.00/20D	12.00/20	Cum HB600	6-5½x6	672		500	150-2000	Own W826	5	Own W826	2F	H	** -5.6
W-817	158	205	36000	14400	12.00/20D	12.00/20	Cum HRFB600	6-5½x6	743		505	180-2000	Own W817	5	Own 817	SF	H	** -5.4
W-827	158	205	36000	14600	12.00/20D	12.00/20	Cum HRFB600	6-5½x6	743		505	180-2000	Own W827	5	Own 827	2F	H	** -5.4
(D) WA-806	160	205	40000	*16000	13.00/20D	14.00/20S	Cum HRFB600	6-5½x6	743		505	180-2000	Own WA806	12	Own WA806	2F	H	** -6.15
W2211	160	205	42000	*16500	13.00/20D	14.00/20S	Wau 145GBK	6-5½x6	779		880	240-2400	Own W2211	12	Own W2211	2F	H	** -6.15
W2206	160	205	54000	*19000	13.00/24D	14.00/24	HS 400	6-5½x7			930	295-2000	Own W2206	10	Own W2206	2F	H	** -6.3
(D) WA2206	160	205	42000	*16800	13.00/20D	14.00/20S	Cum NHB-600	6-5½x6	743		535	200-2100	Own WA2206	12	Own WA2206	2F	H	** -6.15
(D) W2206	160	205	54000	*19500	13.00/24D	14.00/24	Cum NHR5600	6-5½x6	743		800	300-2100	Own W2206	10	Own W2206	2F	H	** -6.30
Walter (c.f.) FZM	126	180	24000	9000	12.00/20S		Wau MZA	6-4½x4½	404	5.6	290	125-2900	Own FJN	8	Own MS	2	H	** -8.00
(c.f.) AEB	126	160	34000	13000	12.00/24S		Wau 140GZ	6-4½x5½	564	6.2	440	165-2250	Own FC	6	Own FCC	2	H	** -8.00
(c.f.) AGB	138	162	34000	14000	12.00/24S		Wau 145GK	6-5½x6	779	6.2	585	215-2000	Own FA	6	Own FCC	2	H	** -8.00
(c.f.) AGR	138	162	42000	15000	12.00/24D		Wau 145GK	6-5½x6	779	6.2	585	215-2000	Own FA	6	Own FCH	2	H	** -8.00
Ward La Fr. FD1			35000	*11500	11.00/22	11.00/22	Cent 6513	6-4½x5½	513	5.9	405	180-2800	Ful 5A620	5	Tim R462W	S2	R	** -8.15
(D) FD2			35000	*12000	11.00/24	11.00/24	Cum HB600	6-5½x6	672	17.0	900	150-1800	Ful 5A920	5	Tim R462W	S2	R	** -8.15
Willys Jp. CJ-3B	80	80	3500	*2191	6.00/16S	7.00/15S	Own CJ-3B	4-3½x4½	134	6.9	114	70-4000	WG T90C	10	Spi 44-2	Hy½	H	** -5.38
CJ-5	81	81	3500	*2276	6.00/16S	7.00/15S	Own CJ-3B	4-3½x4½	134	6.9	114	70-4000	WG T90C	10	Spi 44-2	Hy½	H	** -5.38
475-4WD	110	110	5300	*3115	7.00/16S		Own 475	4-3½x4½	134	6.9	114	72-4000	WG T90C	10	Spi 53	H½	H	** -5.38
6226-4WD	110	110	5500	*3200	7.00/16S		Kai 6-226	6-3⅛x4½	226	6.9	190	115-3650	WG T90C	10	Tim 5140NX4	Sp	H	4.88-5.38
Six-Wheelers																		
Brockway 146SL	157	190	40000	10125	10.00/20	10.00/22	BC 429D	6-4½x4½	427	6.5	352	165-3000	Fu 5A43†	15	Tim SLDD	HF	L	5.90-8.43
153SQ	156	204	45000	13275	11.00/20	11.00/22	BC 429D	6-4½x4½	427	6.5	352	165-3000	Fu 5A43†	15	Tim SQDD	HF	L	6.44-8.31
280SQ	156	204	60000	14125	11.00/20	11.00/22	BC 488D	6-4½x5½	572	6.3	484	230-2800	Fu 5C65†	15	Tim SQDD	HF	L	6.44-8.31
282SF	156	234	60000	15320	11.00/22	12.00/24	BC 488D	6-4½x5½	572	6.3	484	230-2800	Fu 5C65†	15	Tim SFDD	HF	L	8.07-10.16
Diamond T 922-28M	154	190	(a)	10100	8.25/20	10.00/20	DC K6330	6-4x4½	330	6.5	286	141-3000	Opt	Op	Eat 28M	HF	L	Opt
630-32M	157	223	(b)	12000	8.25/20	10.00/20	Own XL406	6-4½x4½	406	6.5	338	164-2750	Opt	Op	Eat 32M	SF	L	Opt
730-SLDD	157	241	(c)	12700	10.00/20	10.00/22	Own XL486	6-4½x5	451	6.5	388	174-2900	Opt	Op	Tim SLDD	2F	L	Opt
(T) 830-SQW	157	241	28000	12900	10.00/20	10.00/22	Own XL501	6-4½x5½	501	6.5	430	201-3000	Opt	Op	Tim SQW	WF	L	Opt
(T) 921-36M	167	241	(d)	15650	9.00/20	11.00/22	Cum HB600	6-4½x6	672	17.0	500	150-1800	Fu 10B1120	10	Eat 36M	HF	L	Opt
(T) 921R-SQDD	160	241	(d)	15300	9.00/20	11.00/20	Cum HRB6	6-5½x6	743	15.8	502	180-2000	Fu 10B1120	10	Tim SQDD	2F	L	Opt
Dodge C-1-Y36	164	190	40000	12200	10.00/20D	10.00/20	Own T-383	6-4⅛x5⅛	413	6.5	343	171-3200	Cla 280V2	5	T SD3010	ASF	L	** -8.27

For references and abbreviations see page 147

For Directory of the Truck Manufacturers listed above, see page 263

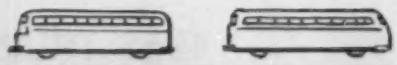
1955 TRUCK SPECIFICATIONS—*concluded*

MAKE AND MODEL	WHEEL-BASE		Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES (D-dual rear S-single rear)		ENGINE DETAILS						TRANSMISSION		REAR AXLE			
	Minimum Standard	Maximum Standard			Standard Front and Rear	Maximum Authorized Tire Size (Duals unless noted)	Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Make and Model	Forward Speeds	Make and Model	Gear and Type	Drive and Torque	Gear Ratio Range in High
Six-Wheelers—Cont'd																		
Duplex TH6	162	220	30000	9160	8.25/20	9.00/20	Her JXD	6-4x4½	329	6.2	240	113-3000	Fu SS33‡	10	Tim SBD1085	BF	L	** -6.16
RH-6	160	208	40000	11500	10.00/20	11.00/20	Her WXLC3	6-4½x4½	404	5.8	312	130-2600	Fu SA43	8	Tim SD3010	2F	R	6.27-
(D) L6	172	208	45000	11800	11.00/20	12.00/20	Cum HB600	6-4½x6	672	17.0	485	180-1900	Fu SA820	8	Tim SD454	SF2	L	6.0 -6.16
FWD H6x6G	138	Opt	30000	*13150	9.00/20D	10.00/20	Wau MZA	6-4½x4½	404	5.8	291	130-3600	Own H	10	Own H	SF	T	4.7-11.52
6-324	154	Opt	32000	*12000	8.25/20D	10.00/20	Int RD372	6-4½x4½	371	6.5	309	165-3200	Fu SA620	10	Own 6-23	SF	T	4.7-11.52
6-325	154	Opt	32000	*12000	8.25/20D	10.00/20	Int RD406	6-4½x4½	406	6.5	338	175-3200	Fu SA626	10	Own 6-23	SF	T	4.7-11.52
HC6x6G	138	Opt	35300	*13620	9.00/20D	10.00/20	Wau 140GKB	6-4½x5½	525	6.4	426	172-2600	Own H	10	Own H	SF	T	4.7-11.52
6-360	154	Opt	36000	*12440	9.00/20D	10.00/20	Int RD450	6-4½x5	450	6.2	387	182-3000	Fu SC650	10	Own 6-23	SF	T	4.7-11.52
(D) 6-364D	154	Opt	36000	*13220	9.00/20D	10.00/20	GMC 4-71	4-4½x5	284	16.0	365	180-2100	Fu SC66	10	Own 6-23	SF	T	4.7-11.52
(D) 6-388D	158	Opt	36000	*14070	9.00/20D	10.00/20	Cum HRBS	6-5½x6	743	15.5	505	180-2000	Fu SC72	10	Own 6-23	SF	T	4.7-11.52
(D) HC9x6D	138	Opt	40000	*14380	9.00/20D	10.00/20	G.MC 4-71	4-4½x5	284	16.0	365	180-2100	Own H	10	Own YU	SF	T	4.7-11.52
6-407	154	Opt	40000	*12780	10.00/20D	10.00/20	Int RD501	6-4½x5½	501	6.5	444	212-3000	Fu SC65	10	Own 6-23	SF	T	4.7-11.52
(D) 6-406D	188	Opt	40000	*14410	10.00/20D	10.00/20	GMC 6-71	6-4½x5	426	16.0	600	200-2000	Fu SA1120	10	Own 6-23	SF	T	4.7-11.52
(D) 6-409D	188	Opt	40000	*14380	10.00/20D	10.00/20	Cum NHB	6-5½x6	743	15.5	535	200-2100	Fu SC72	10	Own 6-23	SF	T	4.7-11.52
6-909	188	Opt	60000	*17510	12.00/20D	13.00/20	Wau 145GKB	6-5½x6	779	6.2	595	240-2400	Fu 10A1120	10	Own 6-23	SF	T	5.7-6.53
(D) 6-906D	188	Opt	60000	*18180	12.00/20D	13.00/20	GMC 6-71	6-4½x5	426	16.0	600	200-2000	Fu 10A1120	10	Own 6-23	SF	T	5.7-6.53
(D) 6-909D	188	Opt	60000	*18010	12.00/20D	13.00/20	Cum NHB	6-5½x6	743	15.5	535	200-2100	Fu 10A1120	10	Own 6-23	SF	T	5.7-6.53
Q6-406	189		40000	*14100	11.00/20D		Int RD450	6-4½x5	450	6.2	387	182-3000	Fu SC65	10	Own 6-23	SF	T	4.7-11.52
(D) R6-404D	229	Opt	40000	*15650	10.00/20D		GMC 4-71	4-4½x5	284	16.0	365	150-2100	Fu R95C	20	Own 6-23	SF	T	4.7-11.52
(D) R6-406D	229	Opt	40000	*16200	10.00/20D		GMC 6-71	6-4½x5	426	16.0	600	200-2000	Fu T95C	20	Own 6-23	SF	T	4.7-11.52
L6-409	217	Opt	40000	*14760	10.00/22D		Wau 145GK	6-5½x6	779	6.2	595	216-2000	Fu R95C	20	Own 6-23	SF	T	4.7-11.52
(D) L6-406D	217	Opt	40000	*15260	10.00/22D		GMC 6-71	6-4½x5	426	16.0	600	200-2000	Fu R95C	20	Own 6-23	SF	T	4.7-11.52
(D) L6-409D	217	Opt	40000	*15430	10.00/22D		Cum NHB	6-5½x6	743	15.5	535	200-2100	Fu R95C	20	Own 6-23	SF	T	4.7-11.52
Kenworth (D) s822	191	236	43000	14250	10.00/20	11.00/22	Cum HRB-600	6-5½x6	743	16.0	540	165-1800	BL 8241	12	T U200PA††	2F	H	5.91-8.76
(D) s823-4R	190	255	43000	15300	10.00/20	11.00/22	Cum HRB-600	6-5½x6	743	16.0	540	165-1800	BL 8241	12	Tim SQW	WF	L	5.67-8.20
(D) s824-4R	190	255	61000	16500	10.00/20	11.00/22	Cum HRB-600	6-5½x6	743	16.0	540	165-1800	BL 8241	12	Tim SW456P	WF	L	4.72-6.20
(D) 548-4R	201		66000	20150	11.00/22	12.00/24	Cum HRB-600	6-5½x6	743	16.0	540	165-1800	BL 8241	12	SFD-4600	B2F	L	8.07-11.6
(D) 552-4	178		54000	22500	13.00/24	13.00/24	Cum HRB-600	6-5½x6	743	16.0	540	165-1800	BL 8241	12	Tim SFD4600	B2F	L	8.07-11.6
(D) s825-4R	190	255	43000	14500	10.00/20	11.00/22	Cum HRS-600	6-5½x6	743	16.0	540	165-1800	BL 8241	12	TI QSW2FR2	WF	L	5.67-8.20
s826-4R	175	255	43000	14300	10.00/20	11.00/22	LeR H540	6-4½x5½	540	6.7	460	200-2600	Fu SC650	16	Tim SQD	B2F	L	5.78-8.21
(D) 848-4R	210	234	66000	20000	11.00/22	14.00/24	Cum HRB600	6-5½x6	743	16.0	540	165-1800	BL-8241^	12	Tim SFD4600	B2F	L	8.07-11.6
(D) 849-4R	210	234	66000	21700	12.00/24	14.00/24	Cum HRB600	6-5½x6	743	16.0	540	165-1800	BL-8241^	12	Tim SFD4600	B2F	L	8.07-11.6
(D) *850-4R	210	234	66000	21900	12.00/24	14.00/24	Cum HRB600	6-5½x6	743	16.0	540	165-1800	BL-8241^	12	Tim SFD4600	B2F	L	8.07-11.6
Mormon-Herrington M706	156	216	36000	10000	9.00/20	10.00/20	Ford	6-3.62x3.1	256	7.2	226	138-3600	Ford-Own	10	Ford-Own	Hy	H	** -7.2
CM706	156	180	36000	10050	9.00/20	10.00/20	Ford	6-3.62x3.1	256	7.2	226	138-3900	Ford-Own	10	Ford-Own	Hy	H	** -7.2
M-756	156	216	36000	10200	9.00/20D	10.00/20	Ford	6-3.56x3	279	7.2	246	152-3600	Ford-Own	10	Ford-Own	H	H	** -7.2
CM-756	156	180	36000	10250	9.00/20D	10.00/20	Ford	6-3.56x3	279	7.2	246	152-3600	Ford	10	Ford	H	H	** -7.2
M906	156	216	40000	10500	10.00/20	10.00/20	Ford	6-3x8x3	317	7.2	286	170-3600	Ford-Own	10	Own	Hy2	H	** -8.46
CM-906	156	180	40000	10500	10.00/20	10.00/20	Ford	6-3.8x3	317	7.2	286	170-3900	Ford-Own	10	Own	Hy2	H	** -8.46
Oshkosh W-825-6X6	178	Opt	45000	12500	11.00/20	11.00/20	Cum R8602	6-4½x5½	602		404	218-2600	Own W-825	5	Tim SFD3020	2F	L	** -7.2
W-826-6X6	178	Opt	45000	19000	11.00/20	11.00/20	Cum HB600	6-4½x6	672		500	150-2800	Own W-826	5	Tim SFD-3020	2F	L	** -8.6
**W1602	Opt	Opt	95000		14.00/24D	14.00/24	Optional								Tim SD472	2F	L	
**WA1600	Opt	Opt	80000		11.00/24D	12.00/24	Optional								Tim SFD4600	2F	L	
Peterbilt (E) 280	193	Opt	36000		10.00/20D	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim SW-3456	WF	R	6.16-8.80
(D) 280	196	Opt	36000		10.00/20D	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim SW-456	WF	R	6.16-8.80
(D) 370	196	Opt	44000		10.00/20D	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim SW-456	WF	R	6.16-8.80
(D) 380	194	Opt	44000		10.00/20D	11.00/22	Cum N-HB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim SFD4600	2F	R	** -10.16
(D) 260	197	Opt	79000		12.00/24	14.00/24	Cum N-HB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim SD472W	2F	R	** -10.16
(D) 350 (one)	135	Opt	36000		10.00/20	11.00/22	Cum N-HB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	SW 3456	WF	R	6.16-8.80
(D) 351	196	Opt	36000	13200	10.00/20	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	Tim SW3456			6.16-7.38
(D) 360 (one)	135	Opt	36000		10.00/20	11.00/22	Cum NHB600	6-5½x6	743	17.0	500	200-2100	Spi 8041	12	SW 456	WF	R	6.16-8.80
Reo F-220	150	203	42000	9875	9.00/20	10.00/20	Own 331‡	6-3⅞x4½	331	6.4	264	140-3200	Cla 205V	5	Tim SLD	F2	T	6.41-7.66
F-226	150	203	42000	10080	9.00/20	10.00/20	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 290V	5	Tim SLD	F2	T	7.69-8.33
F-230	169	200	45000	11925	10.00/20	11.00/20	Con T8427	6-4½x4½	427	6.4	348	163-2800	Cla 290V	5	Tim SFD3020	F2	T	7.5-
F-236-D	169	200	45000	12555	10.00/20	11.00/20	Cum JBS600*	6-4½x6	401	15.0	360	150-2500	Cla 292VO	5	Tim SFD3020	F2	T	7.5-
F-226-M	150	203	47000	11305	11.00/20†	11.00/20†	Own 331‡	6-3⅞x4½	331	6.4	264	140-3200	Cla 205V	5	Tim SLD	F2	T	** -8.33
F-206 (6X6)	150	203	42000	11325	9.00/20	10.00/20	Own 331‡	6-3⅞x4½	331	6.4	264	140-3200	Cla 205V	5	Tim SLD	F2	T	** -7.66
F-536-M	155	200	50000	12140	11.00/20†	11.00/22†	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 290V	5	Tim SQD	F2	T	** -8.21
F-50 (6X2)	140	188	40000	9890	9.00/20	10.00/20	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 265V	5	Tim SQTT335	HF4	H	6.63-8.61
F-50T (6X2)	140	140	40000	10140	9.00/20	10.00/20	Own 160*	6-4½x4½	331	6.7	290	160-3200	Cla 265V	5	Tim SQTT335	HF4	H	6.63-8.61
A-420	139	199	40000	10940	9.00/20	10.00/20	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SQTT235+	HF2	H	6.63-8.61
A-422	133	151	40000	11250	9.00/20	10.00/20	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SQTT335	HF4	H	6.63-8.61
A-430	139	199	44000	11295	10.00/20	10.00/20	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SLD	F2	T	6.41-9.33
A-432	157	187	42000	11735	9.00/20	10.00/20	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SLDD	F2	T	6.41-9.33
A-72-	139	199	44000	11115	10.00/20	11.00/22	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SRT235+	HF2	H	6.26-7.66
A-722	133	151	44000	11440	10.00/20	11.00/22	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SRT335	HF4	H	6.99-8.36
A-730	161	199	49000	12545	10.00/20	11.00/22	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SQD ::	F2	T	6.44-9.21
A-733	157	187	49000	12035	10.00/20	11.00/22	Own OV160*	6-3⅞x4½	390	7.3	345	195-3200	Spi 6352	5	Tim SQDD ::	F2	T	6.44-9.21
Truckstell (C) F600	152	221	26000	&7900	7.50/20	8.25/20	Ford	6-3.1x3½	230	6.8	194	106-3800	Ford††	12	Ford	HF	R	** -6.8
(C) F700	153	225	32000	&8900	7.50/20	9.00/20	Ford	6-3⅛x4.4	254	6.8	212	112-3500	Ford††	12	Ford	HF	R	** -7.2
(C) F750	153	225	34000	&9350	8.25/20	9.00/20	Ford	6-3⅛x3½	270	7.1	244	140-3800	Ford††	15	Ford	HF	R	** -7.2
(C) F800	153	225	40000	&10170	9.00/20	10.00/20	Ford	6-3.8x3½	317	7.1	284	155-3800	Ford††	15	Ford	SF	R	** -7.17
(C) F900	153	225	49000	&11640	10.00/20	11.00/20	Ford	6-3.8x3½	317	7.1	284	155-3800	Ford††	15	Ford	SF	R	** -7.17
(C) C5403	126	204	28000	&7800	7.50/20	9.00/20	Chev.	6-3⅞x3½	235	6.7	192	105-3800	Chev.††	12	Chev.	HF	R	** -6.17
(C) C5103	160	229	30000	*7050	7.50/20	9.00/20-10	Chev.	6-3⅞x3½	235	7.1	200	108-3800	Chev.††	12	Chev.	HyF	R	** -6.17
Ward La Fr. D1T	160	220	39500		10.00/20	11.00/20	Con T9427	6-3⅞x4½	427		348	152-2800	Fu SA434‡	15	Tim SD3010P	2F	L	** -6.27
D3T**	160	220	39500		10.00/20	11.00/20	Con R9572	6-4½x5½	572		440	198-2800	Fu SC854‡	15	Tim SD3010P	2F	L	** -7.66
D3ST**	160	220	39500		10.00/20	11.00/20	Con R9662	6-4½x5½	662		462	208-2600	Fu SC854‡	15	Tim SD3010P	2F	L	** -7.66
(D) D4T**	160	220	42000		11.00/20	11.00/20	Cum HB600	6-4½x6	672		500	150-1800	Fu SC724‡	15	Tim SD3010P	2F	L	** -6.64
(D) D5RT**	160	220	42000		11.00/20	11.00/20	Cum HRB600	6-5½x6	743		540	165-1800	Fu SC724‡	15	Tim SD3010P	2F	L	** -6.64
(D) D5NT**	160	220	42000		11.00/20	11.00/20	Cum NHB600	6-5½x6	743		540	200-2100	Fu SC724‡	15	Tim SW3012PA	WF	L	** -6.17
White-Freightliner (c.o.e.) WF64	178			13500	10.00/22		Cum NHB	6-5½x6	743	13.0	575	200-2100	Spi 7041	12	Tim SQW	WF	H	** -6.00
(c.o.e.) WF64T	198			13800	10.00/22		Cum NHB	6-5½x6	743	13.0	575	200-2100	Fu R95C	10	Tim SQW	WF	H	** -6.00

For references and abbreviations see page 147

For Directory of the Truck Manufacturers listed above, see page 263

BUSES 1955



CITY AND INTERCITY

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Line Number	BUS MAKE AND MODEL	GENERAL: Passenger Rating	GENERAL: Type (City Service, Parlor, etc.)	GENERAL: Standard Wheelbase (In.)	GENERAL: Overall Length (In.)—Bumper to Bumper	GENERAL: Inside Length (In.)—Passenger Compartment	GENERAL: Tread (In.)—Front and Rear	GENERAL: Complete Vehicle Weight—Dry (Lb.)	GENERAL: Standard Tire Size (In.)—Front and Rear	ENGINE: Make and Model	ENGINE: Cycle and Fuel	ENGINE: Location	ENGINE: Number of Cylinders—Bore and Stroke (In.)	ENGINE: Displacement (Cu. In.)	ENGINE: Rated Horsepower (A.M.A.)	ENGINE: Maximum Brake Hp. at Governed R.P.M.	ENGINE: Maximum Net Torque (Lb. Ft.) at Specified R.P.M.	ENGINE: Compression Ratio—to 1	ENGINE: Compression Pressure—(Lb./In.) at Specified R.P.M.	ENGINE: Valve Arrangement	Oiling System: Pressure to—
1	Beck Luxury Liner	37	IC	220	420	356	80½–71½		11.00/20	Cum HRB600	4-D	R	6-5½x6	743	63.1	165-1800	540-1000	15.5		I	abcd
2	Mainliner	37	P	220	412	350	80½–71		10.00/20	Int RD450‡	4-G	R	6-4⅝x5	450	45.9	146-2600	294-1000	6.20		I	abcd
3	29-33	29-33	P	217½	402	288	80½–71½		10.00/20	Cum JBS600*	4-D	R	6-4½x5	401	40.8	150-2500	360-1500	15.5		I	abcd
4	Fitzjohn FTG Cityliner	29-31	CS	156½	323½	277	81⅞–74	12000	8.25/20	Her JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg
5	FTG Cityliner	29-31	CS	156½	323½	277	81⅞–74	12400	8.25/20	Her WXLD	4-G	TR	6-4⅛x4½	404	43.3	140-2600	316-1400	6.50		L	ac
6	FTG Cityliner	33-35	CS	162½	351	304½	81⅞–74	12750	9.00/20	Her JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg
7	FTG Cityliner	33-35	CS	162½	351	304½	81⅞–74	13150	9.00/20	Her WXLD	4-G	TR	6-4⅛x4½	404	43.3	140-2600	316-1400	6.50		L	ac
8	FTD Cityliner	33-35	CS	162½	351	304½	81⅞–74	13000	9.00/20	Cum JBS600	4-D	R	6-4½x5	401	40.8	150-2500	360-1500	15.5		I	abcd
9	FTD Cityliner	37-39	CS	210½	378½	332½	81⅞–74	13900	10.00/20	Her WXLD	4-G	TR	6-4⅛x4½	404	43.3	140-2600	316-1400	6.50		L	ac
10	FTD Cityliner	37-39	CS	210½	378½	332½	81⅞–74	14550	10.00/20	Cum JBS600	4-D	R	6-4½x5	401	40.8	150-2500	360-1500	15.5		I	abcd
11	FSG Suburbanliner	29	Sub	156½	325½	277	81⅞–74	12500	8.25/20	Her JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg
12	FSG Suburbanliner	29	Sub	156½	325½	277	81⅞–74	12900	8.25/20	Her WXLD	4-G	TR	6-4⅛x4½	404	43.3	140-2600	316-1400	6.50		L	ac
13	FSG Suburbanliner	33	Sub	162½	351	304½	81⅞–74	13250	9.00/20	Her JXLD	4-G	TR	6-4x4½	339	38.4	131-3000	272-1400	6.20		L	abcdg
14	FSG Suburbanliner	33	Sub	162½	351	304½	81⅞–74	13650	9.00/20	Her WXLD	4-G	TR	6-4⅛x4½	404	43.3	140-2600	316-1400	6.50		L	ac
15	FSG Suburbanliner	37	Sub	210½	378½	332½	81⅞–74	14400	10.00/20	Her WXLD	4-G	TR	6-4⅛x4½	404	43.3	140-2600	316-1400	6.50		L	ac
16	Roadrunner	33	P	201	384	324	80½–71	17550	10.00/20	Wau 140GKB	4-G	R	6-4⅛x5	525	48.8	177-2600	425-1000	6.50		I	abcdfg
17	Roadrunner	33	P	201	384	324	80½–71	17750	10.00/20	Cum JBS600	4-D	R	6-4½x5	401	40.8	150-2500	360-1500	15.5		I	abcd
18	Roadrunner	37	P	237	420	360	80½–71½	18650	11.00/20	Wau 140GKB	4-G	R	6-4⅛x5	525	48.8	177-2600	425-1000	6.50		I	abcdfg
19	Roadrunner	37	P	237	429	360	80½–71½	18750	11.00/20	Cum JT6B	4-D	R	6-4½x5	401	40.8	165-2500	490-1800	15.5		I	abcd
20	Flxible 210B7	37	IC	218	410½	338	80½–69½	15100	9.00/20	Bui FB320	4-G	R	6-3⅞x4½	320	37.8	144-3400	278-2200	6.30		I	acdf
21	182B1	26	IC	182	374½	264	80½–69½	14600	9.00/20	Bui FB320	4-G	R	6-3⅞x6½	320	37.8	144-3400	278-2200	6.30		I	acdf
22	216F1	29	IC	216	410½	301	80½–69½	15610	9.00/20	Fag FTC180	4-G	R	6-4⅛x4½	404	43.3	162-2800	362-1600	7.50		I	abc
23	216JBS1	29	IC	216	410½	300	80½–69½	15465	9.00/20	Cum JBS600	4-D	R	6-4½x5	401	40.8	155-2500	360-1400	15.5		I	abcd
24	216GM1	29	IC	216	410½	300	80½–69½		9.00/20	GM 4-71	2-D	R	6-4½x5	284	28.9	150-2100	387-1600	16.0		I	abcd
25	228JT1-55	37	IC	228½	419½	401½	80½–71½	18200	10.00/20	Cum JT600	4-D	R	6-4½x5	401	43.3	165-2500	388-1700	15.5		I	abcd
26	Flxible-Twin Coach FT-30	38	CS	190½	385	340	80–72	14400	10.00/20	Fag FTC-180	4-G	UF	6-4⅛x4½	404	43.3	180-2800	360-1600	7.50		I	
27	FT-32	40	CS	222	403	376	80–72	15600	10.00/20	Fag FTC-200	4-G	UF	6-4⅝x5	451	45.9	200-2800	400-1600	7.25		I	
28	FT-36	44	CS	232½	420	402	80–72	16600	10.00/20	Fag FTC-200	4-G	UF	6-4⅝x5	451	45.9	200-2800	400-1600	7.25		I	
29	FT-40	52	CS	274½	480	462	80–72	18500	11.00/20	Fag FTC-210	4-G	UF	6-4½x5	477	46.0	210-2800	480-1800	7.00		I	
30	G.M.C. TGH3102	31	CS	160½	325½	287	81½–79½	9635	8.25/20	Own 270	4-G	TR	6-3⅞x4	279	34.3	124-3200	232-1000	7.50	185-1000	I	abcdfgh
31	TDH3714	37	CS	210½	369½	336	79½–70½	16075	10.00/20	Own 6-71	2-D	TR	6-4¼x5	284	28.9	143-2100	375-1600	17.0	450-600	I	abcdfgh
32	TDH4512	45	CS	239½	426	389	79½–70½	17170	10.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.4	167-2000	489-1000	17.0	450-600	I	abcdfgh
33	TDM4515	45	Sub	239½	426	389	79½–70½	19060	10.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.4	211-2000	574-1600	17.0	450-600	I	abcdfgh
34	TDH5105	51	CS	281½	477	441	97½–70½	18855	11.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.4	167-2000	489-1000	17.0	450-600	I	abcdfgh
35	TDH5106	51	CS	281½	477	441	90½–70½	18445	11.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.4	167-2000	489-1000	17.0	450-600	I	abcdfgh
36	TDM5106	51	Sub	281½	477	441	90½–70½	20625	11.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.4	211-2000	574-1600	17.0	450-600	I	abcdfgh
37	PD4104	41	P	261	429	390	78½–70½	19310	11.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.4	211-2000	574-1600	17.0	450-600	I	abcdfgh
38	Mack C41	41	CS	237½	390	360½	79½–70½	17900	10.00/20	Own END673	4-D	TR	6-4½x6	672	57.0	170-2100	480-1200	16.0	530-1000	I	acdeh
39	C47	45	CS	261½	420	380½	79½–70½	18200	10.00/20	Own END673	4-D	TR	6-4½x6	672	57.0	170-2100	480-1200	16.0	530-1000	I	acdeh
40	C49	49	CS	289½	472½	443	79½–70½	19200	11.00/20	Own END673	4-D	TR	6-4½x6	672	57.0	170-2100	480-1200	16.0	530-1000	I	acdeh
41	Marmon-Herrington 8M8	27	CS	146	312		80⅞–68½	9300	8.25/20	Ford 254	4-G	TR	6-3½x4½	254	29.4	104-3000	212-1200	6.65		L	ad
42	8M2B	31	CS	182	348			10000	8.25/20	Ford 254	4-G	TR	6-3½x4½	254	29.4	104-3000	212-1200	6.65		L	ad
43	8M4C	27-29	CS	146	312		83⅞–68½	10000	8.25/20	Ford 279	4-G	TR	6-3.56x3½	279	40.6	138-3200	244-1850	7.00		I	acdfg
44	8M3C	31-35	CS	182	348		80½–68½	10560	8.25/20	Ford 279	4-G	TR	6-3.56x3½	279	40.6	138-3200	244-1850	7.00		I	acdfg
45	Southern Coach S-43-DHC	45	CS	232½	418	404	80½–72	18714	11.00/22	Cum nhhb600	4-D	UF	6-5½x6	743	63.0	290-2100	535-1200	15.5		I	abcdf
46	S-38-DHL	38	CS	194½	358½	341½	80½–71½	14480	10.00/20	Fag FLDH600	D	UF	6-4⅛x5½	987	56.2	160-2400	452-1200	15.0		I	acdfg
47	S-41-HF	41	CS	221½	391½	377½	80½–72	15360	11.00/20	Fag FTC180	4-G	UF	6-4⅛x4½	404	43.4	180-2400	360-1600	7.50		I	ac ff
48	Transit 328	28	CS	163½	336	275	81½–73	11100	8.25/20	Cont K-6330	-G	Lr	6-4x4½	330	31.4	145-3200	265-1800	6.50		I	acdfg
49	332	32	CS	181½	364	303	81½–73	11500	8.25/20	Cont K-6330	-G	Lr	6-4x4½	330	38.4	145-3200	296-1800	6.50		I	acdfg
50	340	40	CS	237½	420	359	80½–71½	15120	10.00/20	LoR T-H540	-G	Lr	6-4½x4½	540	64.8	207-3200	450-1800	6.70	115-Cr	I	abcdef

ABBREVIATIONS

4—Two used.
‡—Torque converter.
*—Also available with Cummins JBS-500 engine.
**—Also available with International RD-450 engine.
††—Right side, 13 leaves; left side, 14 leaves. =4
†—Front, 14½; rear, 15.

•—Hundred rpm.
^—Air suspension.
a—Main bearings.
b—Wrist pins.
c—Connecting rods.
d—Camshaft.
e—Accessory drive.
f—Valve lifters or rocker arms and shafts.
g—Timing gears or chain.
h—Air compressor.
i—Balancer shaft.
A—Air.
AL—Electric Auto-Lite Co.
BB—Borg & Beck.
Bos—American Bosch Div.
Bui—Buick Motor Div.
Ce—Centrifugal.
CIC—City and intercity service.
Cla—Clark Equipment Co.
Cont—Continental Motors Corp.
Cr—Cranking speed.
CS—City service.
Cum—Cummins Engine Co.
D—Diesel fuel.
Do—Downdraft.
DR—Delco-Remy Div.
Dp—Drive shaft.
Fag—Fageol.
Fo—Ford Motor Co.

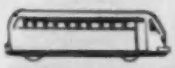
For Directory of Car Manufacturers listed above, see page 263

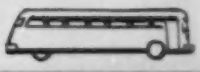
Intercity Passenger Miles Traveled, by Types of Transportation

As reported by National Association of Motor Bus Operators

Billions of Miles

Year	Total Intercity Travel	Automobiles	Public Carriers: Total	Public Carriers: Railroads	Public Carriers: Intercity Buses	Public Carriers: Air Lines	Public Carriers: Waterways
1947	348.3	273.0	73.3	40.8	24.6	6.1	1.8
1948	366.6	287.4	68.2	36.0	24.3	6.2	1.7
1949	379.1	316.7	62.4	30.5	23.3	7.2	1.4
1950	386.9	337.3	59.6	27.5	22.3	8.6	1.2
1951	445.0	379.3	66.5	30.4	23.4	11.4	1.3
1952	477.7	419.3	57.4	30.0	22.8	13.4	1.4
1953	488.0	432.1	55.9	27.5	21.3	15.6	1.5





★ ★ ★ ★

CITY AND INTERCITY

FUEL SYSTEM				ELECTRICAL SYSTEM			Gov-ernor			TRANSMISSION					Uni-versals	REAR AXLE			BRAKES				SPRINGS				RUNNING GEAR			
Carburetor or Injector Pump					Battery														Service			Hand	Front		Rear					
Make and Type	Size (In.)	Tank Capacity (Gal.)	Ignition System—Make	Generator and Starter—Make	Voltage and Amp. Hours Capacity	Type	Max. Governed Speed—M.P.H.	Clutch—Make and Size (In. diam.)	Make	No. of Forward Speeds	Low Speed Ratio—to 1	Type	Number	Size of Series	Make and Model	Standard Gear Ratio—to 1	Type of Applicator	Total Lining Area (Sq. In.)	Drum Diam. (In.)	Operates on—	Total Lining Area (Sq. In.)	No. of Leaves	Length and Width (In.)	No. of Leaves	Length and Width (In.)	Front Axle—Make	Steering Gear—Make	Outside Diameter of Min. Turn. Circle (Ft.)	Line Number
Cum		90		LN	12-155	M	68	LR 17	Fu	5	6.37	M	2	1600	Tim Q-116-DPA	4.62	A		15	Da		14	54-4		70-4	Tim	Ro	80	1
Hal Do		92	DR	LD	12-155	Su	60	Lg 14	Fu	4	4.61	M	2	1500	Tim L110	5.26	A		16½	Da		16	52-3	††	64-4	Tim	Ro	80	2
Cum		80		LD	12-155	M	59	Lg 14	Fu	4	4.61	M	2	1500	Tim L110	5.29	A		16½	Da		16	52-3	17	56-3	Tim	Ro	78	3
Zen Up	1¼	60	DR	DR	12-150	Co	53	BB 13	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	60-3	Tim	Ro	67	4
Zen Do	1¼	60	DR	LD	12-150	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	60-3	Tim	Ro	67	5
Zen Up	1¼	60	DR	DR	12-150	Co	53	BB 13	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	60-3	Tim	Ro	65	6
Zen Do	1¼	60	DR	LD	12-150	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	60-3	Tim	Ro	65	7
Cum		60		LD	12-150A	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	15	54-3	15	60-3	Tim	Ro	65	8
Zen Do	1¼	60	DR	LD	12-150	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	15	54-3	15	60-3	Tim	Ro	73¼	9
Cum		60		LD	12-150A	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	15	54-3	15	60-3	Tim	Ro	73¼	10
Zen Up	1¼	60	DR	DR	12-150	Co	53	BB 13	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	54-3	Tim	Ro	57	11
Zen Do	1¼	60	DR	LD	12-150	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	54-3	Tim	Ro	57	12
Zen Up	1¼	60	DR	DR	12-150	Co	53	BB 13	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	54-3	Tim	Ro	65	13
Zen Do	1¼	60	DR	LD	12-150	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	14	54-3	14	54-3	Tim	Ro	65	14
Zen Do	1¼	60	DR	LD	12-150	Co	53	Lg 14	Cla	3	4.06	M	2	1600	Tim 56434W	6.16	A	586	14½	Da	85	15	54-3	15	54-3	Tim	Ro	77¾	15
Zen Do	1¼	142	LD	LD	12-150	Co	68	Lg 14	Cla	4	4.86	M	2	1600	Tim L110	4.44	A	684	16½	Da	137	*		*		Tim	Ro	71	16
Cum		142		LD	12-150A	Co	68	Lg 14	Cla	4	4.86	M	2	1600	Tim L110	4.44	A	684	16½	Da	137	*		*		Tim	Ro	71	17
Zen Do	1¼	142		LD	12-150	Co	68	LR 15	Cla	4	4.86	M	2	1600	Tim L110	4.44	A	684	16½	Da	137	*		*		Tim	Ro	80	18
Cum	1¼	142		LD	12-150A	Co	68	LR 15	Cla	4	4.86	M	2	1600	Tim L110	4.44	A	684	16½	Da	137	*		*		Tim	Ro	80	19
Str Do		80	DR	DR	12-155	Co	63	Spi 13	Spi	5	4.62	M	2	1500	Tim H110	6.17	A	578	15	Da	45	12	52-3	15	56-3	Tim	Ro	72	20
Str Do		80	DR	DR	12-155	Co	63	Spi 13	Spi	5	4.62	M	2	1500	Tim H110	6.17	A	578	15	Da	45	12	52-3	15	56-3	Tim	Ro	65	21
Hal Do		80	DR	DR	12-155	Co	72	Spi 14	Spi	5	4.62	M	2	1500	Tim H110	5.28	A	578	15	Da	45	12	52-3	15	56-3	FT	Ro	72	22
Cum		80	DR	DR	12-155	Co	65	Spi 14	Spi	5	4.62	M	2	1500	Tim H110	5.28	A	578	15	Da	45	12	52-3	15	56-3	Tim	Ro	72	23
GM		80	DR	DR	12-155	Co	68	Lg 15½	Spi	5	5.06	M	2	1500	Tim H110	4.62	A	578	15	Da	45	12	52-3	15	56-3	Tim	Ro	72	24
Cum		80		DR	12-155	Co	67	Spi 14	Spi	5	4.50	M	2	1600	Tim L110	5.29	A	648	16½	Da	45	*		*			Tim	Ro	62¾	25
Hal Do		80	DR	LD	12-160	Co	28‖	None	Spi‡‡		5.43	H	2	1600	Tim L110	6.16	A		16½	Da		12	56-4	13	60-4	Tim	Ro	69	26
Hal Do		125	DR	LD	12-160	Co	28‖	None	Spi‡‡		5.43	H	2	1600	Tim Q110	6.16	A		16½	Da		13	60-4	13	60-4			67½	27
Hal Do			DR	LD	12-160	Co	28‖	None	Spi‡‡		5.43	H	2	1600	Tim Q110	6.16	A		16½	Da		12	60-4	13	64-4	Tim	Ro	69½	28
Hal Do			DR	LD	12-160	Co			Spi‡‡		5.43	H	2	1600	Tim R110	6.16	A		16½	Da		13	60-4	15	64-4	Tim	Ro	79½	29
Zen Do	1½	60	DR	DR	12-150	Co	52		GM	4	3.82	GH	2	1400	Cla R-1204	6.33	A	620	14½	Da	28	10	52-3	11	56-3	Cla	Sag	68	30
Own		80		DR	12-175A	Co	46	Own 15	GM‡‡	If		H	2	1600	Tim 57620WX2	5.16	A	646	14½	Da	69	*		*		Tim	Sag	70	31
Own		80		DR	12-175A	Co	46	Own 15	GM‡‡	If		H	2	1700	Tim 58620WX1	4.71	A	705	14½	Da	104	*		*		Tim	Sag	78	32
Own		80		DR	12-175A	Co	61	Lg 17	Spi	4	4.38	M	2	1700	Tim 58600WX1	3.88	A	705	14½	Da	104	*		*		Tim	Sag	78	33
Own		80		DR	12-175A	Co	45	Own 15	GM‡‡	If		H	2	1700	Tim 59621WX1	5.16	A	674	14½	Da	104	*		*		Tim	Sag	82	34
Own		80		DR	12-175A	Co	45	Own 15	GM‡‡	If		H	2	1700	Tim 59620WX1	5.16	A	674	14½	Da	104	*		*		Tim	Sag	81	35
Own		80		DR	12-175A	Co	50½	Lg 17	Spi	4	4.36	M	2	1700	Tim 59610WX1	4.13	A	674	14½	Da	104	*		*		Tim	Sag	81	36
Own		100		DR	12-205	Co	60½	Lg 17	Spi	4	3.86	M	2	1700	Tim 59660WX1	4.13	A	764	14½	Da	125½	*		*		Tim	Ro	83	37
Bes	BB	75			12-200		21*	Spi 16	Spi‡‡	If		H	2	1700	Own RAS402	Var	A	784	15	Da	139	13	62-3½	16	62-4	Own	Gem	69	38
Bes	BB	75			12-200		21*	Spi 16	Spi‡‡	If		H	2	1700	Own RAS402	Var	A	784	15	Da	139	12	62-3½	16	62-4	Own	Gem	72	39
Bes	BB	75			12-200		21*	Spi 16	Spi‡‡	If		H	2	1700	Own RAS402	Var	A	843	15	Da	139	12	62-4	15	62-4	Own	Ro	72	40
Hal Do	1¼	60	Fo	Fo	12-150	Co	45		12 Spi	3	3.54	M	2	1400	Tim	6.67	A	448	14½	Da	83		54-3		56-3	Tim	Gem	30½	41
Hal Do	1¼	60	Fo	Fo	12-150	Co	45		12 Spi	3	3.54	M	2	1400	Tim	6.67	A	448	14½	Da	83		54-3		56-3	Tim	Gem	35½	42
Hal Do	1¼	60	Fo	Fo	12-150	Co	48	Lg 12	Spi	3	3.54	M	2	1400	Tim 53569WX	6.67	A	448	14½	Da	83		54-3		56-3	Tim	Gem	30	43
Hal Do	1¼	60	Fo	Fo	12-150	Co	48	Lg 12	Spi	3	3.54	M	2	1400	Tim 53569WX	6.67	A	448	14½	Da	83		54-3		56-3	Tim	Gem	35½	44
Cum		115		Op	12-180	Co	41		16 Spi‡‡	If		H	2	1700	Tim R110WX8	6.83	A	786	16½	Da	126	13	62-3½	16	70-4	Tim	Ro	94½	45
Roa		115		Op	12-180		41	Spi 14	Spi‡‡	If		H	2	1650	Tim L110P	6.16	A	622	16½	Da	101	11	62-3½	12	70-4	Tim	Ro	71½	46
Hal Do		115	Mal	Op	12-180	Su	41	Spi 14	Spi‡‡	If		H	2	1600	Tim Q110P	6.83	A	685	16½	Da	101	12	62-3½	14	70-4	Tim	Ro	80	47
Zen Do	1¼	60	DR	DR	12-150	Co	45	BB 13	War	3	3.71	M	2	1400	Cla R-1001	6.33	A	685	14½	Da	28		56-3		56-3	Cla	Ro	64	48
Zen Do	1¼	60	DR	DR	12-150	Co	45	BB 13	War	3	3.71	M	2	1400	Cla R-1001	6.33	A	685	14½	Da	28		56-3		56-3	Cla	Ro	69	49
Zen Do	1¼	90	DR	LD	12-150	Su	45	Lg 15½	Spi	3	3.90	M	2	1600	Cla R-1602	6.67	A	644	14½	Da	45		56-4		56-4	Cla	Ro	76	50

Fu—Fuller Mfg. Co.
G—Gasoline.
Gem—Gemmer Mfg. Co.
GH—G. M. Hydramatic.
GM—General Motors Corp.
H—Hydraulic.
Her—Hercules Motor Corp.
Hol—Holley Carburetor Co.
I—Valve in head.
IC—Intercity service.
If—Infinite.
Int—International Harvester Co.
L—Valves in side.
LD—Lecce-Neville (alternator); Delco-Remy (starter).
LeR—LeRoi.
Lg—Long Mfg. Div.
LN—Lecce-Neville Co.
Lr—Longitudinally in rear.
LR—Lipe Rollway Corp.
M—Mechanical.
Mal—Mallory.
Op—Optional.
P—Parlor.
R—Rear.
Ro—Ross Gear and Tool Co.
Roa—Rouse.
Sag—Saginaw Steering Gear Div.
Spi—Spicer Mfg. Div.
Str—Stromberg Carburetor Div.
Su—Suction.
Sub—Suburban service.
Tim—Timken Detroit Axle Co.
TR—Transverse in rear.
UF—Under flow.
Up—Updraft.
War—Warner Gear.
Wau—Waukesha Motor Co.
Zen—Zenith Carburetor Div.

For Directory of the Bus Manufacturers listed above, see page 263

Percentage Distribution of Intercity Travel

As reported by National Association of Motor Bus Operators

Year	Total Intercity Travel	Automobiles	Public Carriers			
			Total	Railroads	Intercity Buses	Air Lines	Waterways
1947	100.0	78.8	21.2	11.6	7.1	1.6	0.5
1948	100.0	80.9	19.2	10.1	6.9	1.7	0.5
1949	100.0	83.5	16.5	8.1	6.1	1.9	0.4
1950	100.0	85.0	15.0	6.9	5.6	2.2	0.3
1951	100.0	85.3	14.9	6.8	5.2	2.6	0.3
1952	100.0	85.9	14.1	6.3	4.7	2.8	0.3
1953	100.0	86.8	13.2	5.8	4.3	3.1	0.3

TRACTORS 1955

WHEEL TYPES ★ ★ ★ ★ ★

Line Number	TRACTOR MAKE AND MODEL	GENERAL: Wheelbase (In.)	GENERAL: Minimum Turning Radius Double (Ft.)	GENERAL: Ground Clearance (In.)	GENERAL: Shipping Weight with Rubber Tires (Lb.)	GENERAL: TREAD (In.) Minimum	GENERAL: TREAD (In.) Maximum	DRAWBAR: Lateral Adjustment (In.)	DRAWBAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width (In.)	OVERALL DIMENSIONS: Height—To Highest Point (In.)	WHEELS: Standard Equipment	WHEELS: STEEL Diam. and Face: Front (In.)	WHEELS: STEEL Diam. and Face: Rear (In.)	WHEELS: TIRE SIZE: Front (In.)	WHEELS: TIRE SIZE: Rear (In.)	HP. RATING: Belt	HP. RATING: Drawbar	Nebraska Test Number	Power Take-off	Number of Forward Speeds	Number of Reverse Speeds	Travel Speeds at Normal Governed Engine R.P.M. (M.P.H.) with Standard Wheels: First	Second	Third
1	Allis-Chalmers ... 1B	57	7	12	2360	40	82		11	97	52	64	RT			5.00/15	9.24	22.97	18.00		Op	3	1	3.50	5.30	10.0
2	... S	73	7	21	2960	40	82	22	12	110	52	62	RT			4.00/15	9.24	22.97	19.51	302	Op	3	1	2.75	4.25	8.60
3	... CA	81	7	22	3600	52	80	14	14	124	67	76	RT			5.00/15	10.24	26.62	23.55	453	St	4	1	2.60	3.50	4.50
4	... G	68	6	17	1285	36	64	7	13	116	39	55	RT			4.00/12	6.00	10.91	9.58	398		4	1	1.60	2.26	3.87
5	... WD-45	68	8	28	4485	56	90	8	16	129	74	81	RT			5.50/16	12.00/28	45.27	40.01	498	St	4	1	2.40	3.75	5.00
6	Brockway ... 48D	78	10	20	3600	48	70	28	16	115	63		RT			6.00/16	11/28	36.00	32.00		St	4	1	2.16	3.34	4.71
7	... 49G	78	10	20	3600	48	78	28	16	118	63		RT			6.00/16	11/28	31.75	28.00		St	4	1	2.16	3.34	4.71
8	... 49K	76	10	20	3600	48	78	28	16	118	63		RT			6.00/16	11/28				St	4	1	2.16	3.34	4.71
9	Case ... VA	75	9	18		48	72	16	14	113	64	53	Op	25x4	38x8	6.00/16	10/28			NT	Op	4	1	2.30	3.30	4.90
10	... VAC	83	9	22		48	80	16	16	122	80	58	Op	21x3	42x3	5.00/15	9.34			431	Op	4	1	2.70	3.50	4.50
11	... VAI	75	9	18		44	72	N	12	109	66	51	RT			6.00/16	9.24			NT	Op	4	1	2.64	4.55	5.82
12	... S	66	10			48		16	13	108	58	51	Op	25x4	42x8	5.00/15	11/28			NT	Op	4	1	2.50	3.50	5.00
13	... SC	82	Piv			44	80	17	16	133	74	58	Op	24	40x2	5.00/15	10/28			367	Op	4	1	2.50	3.50	4.75
14	... SI	66	12			48		N	15	110	61.9	51	RT			6.00/16	12.00/24			NT	Op	4	1	2.62	3.57	4.93
15	... D	68	10			50		29	12	110	61	52	Op	28x8	42x11	6.00/16	12/28			348	Op	4	1	2.25	3.75	5.25
16	... DC	80	Piv			48	84	21	16.8	140	81	58	Op	28x4	40x2	5.50/16	11/38			340	Op	4	1	2.00	3.75	5.00
17	... DI	66	12			52		N	17	111	67.2	51	RT			6.00/16	13.00/24			NT	Op	4	1	1.90	3.62	5.00
18	... LA	82	13			50		33	16	140	72	61	Op	30x5	46x12	7.50/18	14/30			400	Op	4	1	2.50	3.33	4.33
19	... LAI	82	16			50		N	16	131	73	58	RT			7.50/18	14.00/28			NT	Op	4	1	1.73	3.12	4.13
20	VAC-14	77				48	80	16	18	114	80	58	RT			5.00/15	11/28					4	1	2.25	3.00	4.00
21	500 Diesel	67				53	66	28	13	144	78	61	RT			7.50/18	14/30			386	Op	4	1	2.01	3.58	4.76
22	Cockshutt ... 20	79	7	28	2950	48	76	19	12	114	63	78	RT			5.00/15	10/28	30.45	26.74	474	Op	4	1	2.31	3.50	5.00
23	... Roverop 30	84	8	23	3600	56	84	21	13	127	74	78	RT			5.50/16	10/38	32.95	28.43	382	Op	4	1	3.12	4.50	6.25
24	... 40	89	12	26	5000	56	84	23	14	134	75	79	RT			6.00/16	12/38	45.59	40.06	442	Op	6	2	1.62	2.75	3.62
25	... 50Q	89	12	26	5000	56	84	23	14	134	75	79	RT			7.50/16	14/34	57.81	51.51	486	Op	6	2	1.52	2.57	3.53
26	... 50D	89	12	26	5000	56	84	23	14	134	75	79	RT			7.50/16	14/34	53.25	47.16	487	Op	6	2	1.52	2.57	3.53
27	Deere, John ... 50	90	8	24	4435	56	88	8	16	132	80	81	RT			5.50/16	11/38	30.97	27.49	466	(f)	6	1	1.50	2.50	3.50
28	... 60	90	8	26	5300	56	88	8	15	139	80	84	RT			6.00/16	12/38	41.57	36.94	472	(f)	6	1	1.50	2.50	3.50
29	... 60 Standard	75	13	24	5347	58	82	27	14	123	70	74	RT			6.00/16	14/30				(f)	6	1	1.50	2.50	2.75
30	... 60 Orchard	75	13	21	5332	64	58	27	12	125	71	57	RT			6.00/16	14/28				(f)	6	1	1.50	2.75	3.25
31	... 60 Hi-Crop	98	18	30	6982	60	90	21	14	96	102	152	RT			7.50/20	11/38			NT	(f)	6	1	1.50	2.25	3.50
32	... 70	90	9	25	5945	60	88	8	16	136	80	88	RT			6.00/16	12/38	50.35	44.21	493	(f)	6	1	2.50	3.50	4.50
33	... 70	90	9	25	5945	60	88	8	16	136	80	88	RT			6.00/16	12/38	50.35	44.21	493	(f)	6	1	2.50	3.50	4.50
34	... 70	90	9	25	5945	60	88	8	16	136	80	88	RT			6.00/16	12/38	50.35	44.21	493	(f)	6	1	2.50	3.50	4.50
35	... 70 Standard	82	14	25	6815	62	80	8	14	129	80	129	RT			6.50/16	15/30				(f)	6	1	2.50	3.50	4.50
36	... 70 Standard	82	14	25	6815	62	80	8	14	129	80	129	RT			6.50/16	15/30				(f)	6	1	2.50	3.50	4.50
37	... 70 Standard	82	14	25	6815	62	80	8	14	129	80	129	RT			6.50/16	15/30				(f)	6	1	2.50	3.50	4.50
38	... 70 Standard	82	14	25	6815	62	80	8	14	129	80	129	RT			6.50/16	15/30				(f)	6	1	2.50	3.50	4.50
39	... 70 Hi-Crop	98	16	30	7410	60	90		14	153	77	101	RT			6.00/16	12/38				St	6	1	2.50	3.50	4.50
40	... M	79	8	21	2750	30	82	10	16	110	51	56	RT			5.00/15	9.24	21.42	19.19	387	St	4	1	1.62	3.12	4.25
41	... R	85	14	25	7500	62	62	40	18	147	79	78	RT	30x6	64x12	7.50/18	14/34	50.96	45.69	486	Op	5	1	2.13	3.33	4.25
42	... MT	82	8	21		48	96	18	16	123	69	73	RT			5.00/15	9.34	21.57	18.77		St	4	1	1.62	3.12	4.25
43	... MI	82	8			48	82		13	110	62	56	RT			5.00/15	9.24	21.42	19.19		St	4	1	1.62	3.12	4.25
44	... 40	82	8	21	3600	48	96	10	14	130	80	72	RT			5.00/16	9.34	25.23	22.86	503	St	4	1	1.53	3.16	4.37
45	... 40-S	70	8	21	2580	30	84	25	12	110	55	70	RT			5.00/15	10/24	24.00	22.36	504	St	4	1	1.89	3.33	4.66
46	... 40-U	77	9	11	2600	41	66	6	11	125	56	64	RT			5.00/15	10/24			NT	Op	4	1			
47	Earthmaster ... C	66	7	20	1520	36	64			96	51	61	RT			4.00/16	6/24				Op	3	1	2.27	3.24	5.18
48	... CH	66	7	24	1545	36	64			100	51	64	RT			4.00/15	7/30				Op	3	1	2.54	3.64	5.81
49	... CN	66	7	20	1505	36	56			96	46	61	RT			4.00/15	6/24				Op	3	1	2.27	3.24	5.18
50	... CNH	66	7	24	1530	36	56			100	46	64	RT			4.00/15	7/30				Op	3	1	2.54	3.64	5.81
51	... D	66	9	20	1600	56	64			96	71	61	RT			4.00/15	9/24				Op	3	1	2.40	3.43	5.48
52	... DH	66	9	24	1610	56	64			100	71	64	RT			4.00/15	7/30				Op	3	1	2.54	3.64	5.81
53	Ferguson TO-35 Std.	72	8		2850	48	76	17	Ad	110	63	57	RT			4.00/19	10/28			NT	St	6	2	1.19	1.77	3.24
54	TO-35 DeLuxe	72	8		2908	48	76	17	Ad	116	63	57	RT			4.00/19	10/28			NT	St	6	2	1.19	1.77	3.24
55	Ford ... NAA	73	8.5	21	2550	48	76	20	34	116	64	67	RT			4.00/19	10/28	32.41	28.82	494	St	4	1	2.77	3.56	4.90
56	... NCA (640)	75	16	12	NA	52	76	20	11	121	64	68	RT			5.50/16	11/28	32.41	28.82	494	St	4	1	2.78	3.57	4.92
57	... NCA (650, 660)	75	16	12	NA	52	76	20	11	121	64	68	RT			5.50/16	11/28	32.41	28.82	494	St	5	1	1.74	2.76	3.67
58	... NDA (650, 660)	75	16	13	NA	52	76	20	11	121	64	68	RT			6.00/16	12/28			NT	St	5	1	1.67	2.64	3.52
59	Friday Tractor ... 648	78	12	12	3580	57	67	26	16	127	75	66	RT			6.00/16	13/24	46.00	34.63		Op	10	2	1.99	2.99	3.40
60	International- ... C26K	85	8	25	3100	56	84	11	14	126	74	73	RT			5.50/16	10/38	NT	NT	NT	St	4	1	2.70	3.80	5.30
61	continental ... DF	85	8	25	3250	56	84	11	14	126	74	86	RT			5.50/16	11/38	35.93	33.10	498	St	4	1	2.83	4.09	5.66
62	... C26	85	8	25	3100	56	84	11	14	126	74	73	RT			5.50/16	10/38	31.23	26.78	498	St	4	1	2.70	3.80	5.30
63	... DE or D26	85	8	25	3250	56	84	11	14	126	74	86	RT			5.50/16	10/38	30.74	27.60	428	St	4	1	2.46	3.54	4.92
64	International ... 400	82			5680	51	80	18	Ad	130	76	93	Op			6.50/16	14/30			NT	Op	5	1	2.42	3.72	4.67
65	... 400 Diesel	82			6000	51	80	18	Ad	130	76	92	Op			6.50/16	14/30			NT	Op	5	1	2.42	3.72	4.67
66	... Super A	71		21	2480	40	66	18	Ad	106	64	62	RT			4.00/15	9.24			NT	St	4	1	2.10	3.40	4.50
67	Love ...	87	8	21	4000	54	78	27	Ad	134	76	68	RT			5.00/16	13/24	37.00	31.00		Op	10	2	2.75	4.75	6.60
68	Massey- ... 44 Sp. Std.	88	12	13		50	68	21	10	138	73	75	RT					50.29	45.85	510	Op	5	1			
69	Harris ... 44 Sp. RT	86	9	16		57	68	21	12	134	79	80	RT					50.29	45.85	510	Op	5	1			
70	... 44 Sp. RS	87	9	16		57	62	21	12	134	79	79	RT					50.29	45.85	510	Op	5	1			
71	... 44 Sp. HA	90	13	16		57	68	21	12	147	79	76	RT					50.29	45.85	510	Op	5	1			

For references and abbreviations see pages 158 and 159

For Directory of the Tractor Manufacturers listed above, see page 263

WHEEL TYPES

Travel Speeds at Normal Governed Engine R.P.M. with Standard Wheels				ENGINE							FUEL									BELT PULLEY				CAPACITIES							
Fourth	Fifth	Sixth	Reverse	Make and Model	Number of Cylinders—Bore and Stroke (In.)	Piston Disp. (Cu. In.)	R.P.M. at Governed Speed	Valve Arrangement	Number of Main Bearings	Diameter of Main Bearings	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Final Drive—Type	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.)	Starting Method	Line Number
.....	.....	.....	3.88	Own 1B	4-3½x3½	125	1500	I	3	2¼	G		FM	Zen	Don	Own	P	Pu	Rec SP SG		8	5½	1130	FK	2	13	4	7	4+	Ele	1
.....	.....	.....	3.00	Own B	4-3½x3½	125	1500	I	3	2¼	G,D		FM	Zen	Don	Own	P	Pu	Rec SP SG		8	5½	1130	FK	2	13	4	6	11½	Ele	2
11.25	.....	.....	3.50	Own CE	4-3½x3½	125	1650	I	3	2¼	G	K	DR	Zen	Don	Own	P	Pu	Rec SP SG		8	5½	1220		2	13	4	6½	11½	Ele	3
9.91	.....	.....	1.96	Cont N62	4-2⅝x3½	62	1800	L	2	2	G		DR	Mar	Don	Cont	P	TS	Rec SP		6	4	1860	FK	1½	6	3½	6		Ele	4
11.25	.....	.....	3.00	Own WD	4-4x4½	226	1400	I	3	2½	G,D		DR	Zen	Uni	Own	P	Pu	Rec SP SG		9	6½	1260	SA	3½	15	6	17	15½	Ele	5
12.00	.....	.....	1.22	Cont GD187	4-3½x4½	157	2900	I	3	2½	O		AL	Bos	Don		P	TS	Rec SP CH		8½	6½	1650	FK	5	12½	5	14	4	Ele	6
5.00	.....	.....	1.69	Cont. F162	4-3½x4½	162	2400	I	3	2½	G		AL	Mar	Don		P	TS	Rec SP CH		8½	6½	1800	FK	5	12½	5	14	4	Ele	7
15.00	.....	.....	1.88	Cont. F140	4-3x4½	140		I	3	2½	K		AL	Mar	Don		P	TS	Rec SP CH		8½	6¼	1860	FK	5	12½	5	14	11 2	Ele	8
10.30	.....	.....	3.30	Own VA	4-3½x3½	124	1425	I	3	2¼	G	D	Own	Mar	Ver	Own	P	Pu		SP SG	10½	6	969	FK	3½	10	4	28	4§	HE	9
11.30	.....	.....	3.70	Own VA	4-3½x3½	124	1425	I	3	2¼	G	D	Own	Mar	Ver	Own	P	Pu		SP SG	10½	6	969	SA	3½	10	4	28	4§	HE	10
14.00	.....	.....	3.64	Own VA	4-3½x3½	124	1425	I	3	2¼	G	D	Own	Mar	Ver	Own	P	Pu		SP SG	10½	6	969	FK	3½	10	4	28	4§	HE	11
10.00	.....	.....	2.75	Own S	4-3½x4	165	1600	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	TD DO CH		9½	6½	1112	FK	4	15½	5	36		HE	12
10.00	.....	.....	2.75	Own S	4-3½x4	165	1600	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	TD DO CH		9½	6½	1112	SA	4	15½	5	36		HE	13
10.00	.....	.....	2.82	Own S	4-3½x4	165	1600	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	Roc MD CH		9½	6½	1112	FK	4	14	5	36		HE	14
10.50	.....	.....	3.00	Own D	4-3½x5½	250	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	TD DO CH		12½	7½	818	FK	7½	18	7	40		HE	16
10.00	.....	.....	2.75	Own D	4-3½x5½	250	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	TD DO CH		12½	7½	818	SA	7½	18	7	40		HE	16
10.20	.....	.....	2.88	Own D	4-3½x5½	250	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	Roc MD CH		12½	7½	818	FK	9½	19	7	40		HE	17
10.00	.....	.....	2.75	Own LA	4-4½x6	463	1100	I	3	3	G	D	Own	Zen	Own	Own	P	Pu	TD DO CH		13	8½	779	FK	15½	31	12	68		HE	18
8.60	.....	.....	2.48	Own LA	4-4½x6	463	1100	I	3	3	G	D	Own	Zen	Own	Own	P	Pu		MD CH	13	8½	779	FK	15½	31	12	68		HE	19
12.00	.....	.....	3.25	Own VA	4-3½x3½	124	1425	I	3	2½	G	D	Own	Mar	Ver	Own	P	Pu		SP SG	10½	6	969	SA	3½	10½	6	28	4§	HE	20
9.89	.....	.....	2.87	Own 500	6-4x5	377	1350	I	7	3	O			Bos	Don	Bos	P	Pu	Own SP CH		13	8½	850	FK	14	30	14	63		Ele	21
12.50	.....	.....	3.89	Cont. F140	4-3½x4½	140	1800	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB SP SG		10	6½	1160	SF	3	12½	4	8	11 2	Ele	22
13.90	.....	.....	4.00	Bu 4B153	4-3½x4½	163	1650	I	3	2½	G	D,O,LP	AL	M-Z	Don	Novi	P	Pu	BB SP SG		8½	7½	1336	SF	3½	16	5	20	**	Ele	23
4.50	6.25	10.50	(e)	Bu 6B230	6-3½x4½	229	1650	I	7	2½	G	O,D,LP	AL	Zen	Don	Novi	P	Pu	BB SP SG		12	8½	1000	SF	4½	21	6	40	**	Ele	24
4.32	5.95	9.85	(e)	Bu 6B273	6-3½x4½	273	1650	I	7	2½	G		AL	Zen	Don	Novi	P	Pu	BB SP SG		12	8½	1000	DFS	4½	21	6	40	**	Ele	25
4.32	5.95	9.85	(e)	Bu 6DA273	6-3½x4½	273	1650	I	7	2½	O			Bos	Don	Bos	P	Pu	BB SP SG		12	8½	1000	DFS	4½	21	6	40	**	Ele	26
4.50	5.75	10.00	2.80	Own 50	2-4½x5½	190	1200	I	2	2¼	G	K,D	DR	Mar	Don	Own	P	Pu	Own MD SG		9½	7½	1250	FK	7	15½	7	16		Ele	27
4.50	6.25	11.00	3.00	Own 60	2-5x6½	321	975	I	2	2½	G	K,D,LP	DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	975	FK	8½	20½	8	28		Ele	28
4.50	6.50	11.50	3.00	Own 60	2-5x6½	321	975	I	2	2½	G	K,D	DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	975	SA	8½	20	8	34		Ele	29
4.50	6.50	11.25	2.75	Own 60	2-5x6½	321	975	I	2	2½	G	K,D	DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	975	SA	8½	20	8	34		Ele	30
4.50	6.25	11.00	3.00	Own 60	2-5x6½	321	975	I	2	2½	G	K,D,LP	DR	Mar	Don	Own	P	Pu	Own MD CH		12½	7½	975	DA	8½	20½	8	28	11 2	Ele	31
6.50	8.75	12.50	3.25	Own 70	2-5x7	380	975	I	2	3¼	G	LP	DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	975	FK	8½	24½	11	30		Ele	32
6.50	8.75	12.50	3.25	Own 70	2-6½x6½	376	1125	I	3	(a)	O		DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	975	FK	8½	24½	11	30		Ele	33
6.50	8.75	12.50	3.25	Own 70	2-6½x7	413	975	I	2	3¼	D		DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	975	FK	8½	24½	11	30		Ele	34
6.25	8.50	12.00	3.25	Own 70	2-5½x7	380	975	I	2	3¼	G		DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	1125	DS	8½	24½	11	30		Ele	35
6.25	8.50	12.00	3.25	Own 70	2-5½x7	380	975	I	2	3¼	LP		DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	1125	DS	8½	33	11	30		Ele	36
6.25	8.50	12.00	3.25	Own 70	2-6½x6½	376	1125	I	3	(a)	O		DR	BB5	Don	Own	P	Pu	Own MD SG		12½	7½	1125	DS	7	20	12	38		Ele	37
6.25	8.50	12.00	3.25	Own 70	2-6½x7	413	975	I	2	3¼	D		DR	Mar	Don	Own	P	Pu	Own MD SG		12½	7½	1125	DS	8½	24½	11	30		Ele	38
6.50	8.75	12.50	3.25	Own 70	2-5½x7	380	975	I	2	3¼	G	K,D,LP	DR	Mar	Don	Own	P	Pu	Own MD CH		12½	7½	975	DA	8½	24½	11	30	11 2	Ele	39
10.00	.....	.....	1.62	Own M	2-4x4	101	1650	I	2	2			DR	Mar	Don	Own	P	TS	Au SP SG		7½	6	1575	FK	3½	9	5	6½	15	Ele	40
5.33	11.58	.....	2.50	Own R	2-5½x8	416	1000	I	2	4	O		BS	BS	Don	Own	P	TS	Own MD SG		12½	9	1000	WG	13	22	13	9		Ele	41
10.00	.....	.....	1.62	Own M	2-4x4	101	1650	I	2	2½	G		DR	Mar	Don	Own	P	TS	Au SP SG		7½	6	1575	FK	3½	9	5	7½	11 2	Ele	42
10.00	.....	.....	1.62	Own M	2-4x4	101	1650	I	2	2½	G		DR	Mar	Don	Own	P	TS	Au SP SG					FK	3½	9	5	6½	11½	Ele	43
11.24	.....	.....	2.50	Own 40	2-4x4	101	1850	I	2	2½	G	D	DR	Mar	Don	Own	P	TS	Au SP SG		9½	6½	1267	FK	3½	10	5	6	11 2	Ele	44
11.95	.....	.....	2.80	Own 40	2-4x4	101	1850	I	2	2½	G	D	DR	Mar	Don	Own	P	TS	Au SP SG		9½	6½	1267	FK	3½	10	5	6½	11½	Ele	45
.....	.....	.....	.....	Own 40	2-4x4	101	1850	I	2	2½	G	D	DR	Mar	Don	Own	P	TS	Au SP SG		9½	6½	1267	FK	3½	10	5	6½	12½	Ele	46
.....	.....	.....	2.72	Cont N62	4-2⅝x3½	62	1800	L									P	TS			7	5	1540		1½	7	4	2½	11	Ele	47
.....	.....	.....	3.63	Cont N62	4-2⅝x3½	62	1800	L									P	TS			7	5	1540		1½	7	4	2½	11	Ele	48
.....	.....	.....	2.72	Cont N62	4-2⅝x3½	62	1800	L									P	TS			7	5	1540		1½	7	4	2½	11	Ele	49
.....	.....	.....	3.63	Cont N62	4-2⅝x3½	62	1800	L									P	TS			7	5	1540		1½	7	4	2½	11	Ele	50
.....	.....	.....	2.65	Cont N62	4-2⅝x3½	62	1800	L									P	TS			7	5	1540		1½	7	4	2½	11	Ele	51
.....	.....	.....	3.63	Cont N62	4-2⅝x3½	62	1800	L									P	TS			7	5	1540		1½	7	4	2½	11	Ele	52
4.71	7.07	12.96	^^	Cont Z134	4-3⅛x3⅞	134	2900	I	3	2¼	G		DR	M-C	Don	Novi	P	Pu	Roc SP SB		9	6	1306	DA	2½	14	6	22		Ele	53
4.71	7.07	12.96	^^	Cont Z134	4-3⅛x3⅞	134	2900	I	3	2¼	G		DR	M-C	Don	Novi	P	Pu	Au SP SB		9	6	1356	DA	2½	14	6	22		Ele	54
10.23	.....	.....	3.29	Own EAE	4-3⅛x3½	134	1750	I	3	2½	G		Hol	Mar	HH	Novi	P	Pu	Lo SP IG		9	6	1358	DA	3½	11	**6	5	8½	Ele	55
10.25	.....	.....	3.21	Own EAE	4-3⅛x3½	134	2000	I	3	2½	G		Hol	Mar	HH	Novi	P	Pu	Lo SP IG		9	6½	1358	DA	3½	11	4	5	9	Ele	56
5.07	11.05	.....	2.96	Own EAE	4-3⅛x3½	134	2000	I	3	2½	G		Hol	Mar	HH	Novi	P	Pu	Lo SP IG		9	6½	1358	DA	3½	11	4	5	9	Ele	57
4.67	10.60	.....	2.84	Own EAF	4-3⅛x3½	172	2000	I	3	2½	G		Hol	Mar	HH	Novi	P	Pu	Lo SP IG		9	6½	1356	DA	3½	14	4	6	11	Ele	58
5.10	6.40	9.20	2.80	Chr Ind. 5	6-3½x4½	218	1800	L	4	2½	G		AL	Car	Uni	Pio	P	Pu	BB SP Hel		9½	6½	1025	FK	5	18½	5	6	6	Ele	59
10.70	.....	.....	3.46	Cont. F162	4-3½x4½	162	1650	L	3	2¼	K		AL	Mar	Don	Novi	P	Pu	Roc SP LG		10	8½	1380	SA	2½	15	5	20	10	Ele	60
11.26	.....	.....	3.52	Bu 4BD162	4-3½x4½	162	1800	I	3	2½	O			Bos	Uni	Bos	P	Pu	Roc SP SG		10	8½	1472	SA	2½	14	5	20	10	Ele	61
10.70	.....	.....	3.40	Cont. F162	4-3½x4½	162	1650	L	3	2¼	G		AL	Mar	Don	Novi	P	Pu	Roc SP SG		10	8½	1380	SA	2½	15	5	20	10	Ele	62
9.75	.....	.....	3.06	Bu 4BD153	4-3½x4½	153	1800	I	3	2½	O			Bos	Uni	Bos	P	Pu	Roc SP SG		10	8½	1472	SA	2½	14	5	20	10	Ele	63
6.49	16.15	.....	3.22	Own C264	4-4x5½	264	1450	I	3		G	D,K		Own	Don	Own	P	Pu	O-R SP SG		11	7½	899	CL	6½	10	8	48		Ele	64
6.49	16.15	.....	3.22	Own D264	4-4x5½	264	1450	I	5		O			Own	Don	Own	P	Pu	O-R SP SG		11	7½	899	CL	7½	10	8	48		Ele	65
9.30	.....	.....	2.70	Own C123	4-3½x5	123	1400	I	3		G	D		C-Z			P	Pu	Roc SP SG		8½	6	1157	WG	3½	11	5	5½	11½	Ele	66
14.15	20.95	29.15	(c)	Chr Ind. 8	6-3½x4½	231	1500		4		G		AL	Car		Pio	P	Pu	BB SP SIG		11	9	Var	FK	4½	20	8	8	12½	Ele	67
.....	.....	.....	.....	Own H277	4-3⅞x4½	277	1350	I	3	2¼	G	D,LP,O	AL	Zen	Don	Own	P	Pu	BB SP SG		13½	8½	3050	WS	22	23	7	48	**	Ele	68
.....	.....	.....	.....	Own H277	4-3⅞x4½	277	1350	I	3	2¼	G	D,LP,O	AL	Zen	Don	Own	P	Pu	BB SP SG		13½	8½	3050	WS	22	23	7	48	**	Ele	69
.....	.....	.....	.....	Own H277	4-3⅞x4½	277	1350	I	3	2¼	G	D,LP,O	AL	Zen	Don	Own	P	Pu	BB SP SG		13½	8½	3050	WS	22	23	7	48	**	Ele	70
.....	.....	.....	.....	Own H277	4-3⅞x4½	277	1350	I	3	2¼	G	D,LP,O	AL	Zen	Don	Own	P	Pu	BB SP SG		13½	8½	3050	WS	22	23	7	48	**	Ele	71

For references and abbreviations see pages 158 and 159

For Directory of the Tractor Manufacturers listed above, see page 263

1955 MODELS OF TRACTORS . . .

Line Number	TRACTOR MAKE AND MODEL	GENERAL: Wheelbase (In.)	GENERAL: Minimum Turning Radius Outside (Ft.)	GENERAL: Ground Clearance (In.)	GENERAL: Shipping Weight with Rubber Tires (Lb.)	GENERAL: TREAD (In.) Minimum	GENERAL: TREAD (In.) Maximum	DRAWBAR: Lateral Adjustment (In.)	DRAWBAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width (In.)	OVERALL DIMENSIONS: Height—To Highest Point (In.)	WHEELS: Standard Equipment	WHEELS: STEEL Diam. and Face: Front (In.)	WHEELS: STEEL Diam. and Face: Rear (In.)	WHEELS: TIRE SIZE: Front (In.)	WHEELS: TIRE SIZE: Rear (In.)	HP. RATING: Belt	HP. RATING: Drawbar	Nebraska Test Number	Power Take-off	Number of Forward Speeds	Number of Reverse Speeds	Travel Speeds at Normal Governed Engine R.P.M. (M.P.H.) with Standard Wheels: First	Second	Third
	Massey-Harris (Cont'd)																										
1	Mustang Std.	75¼	NA	13		52	52	18¼	9½	121	70⅛	NA	RT					31.59	23.91	403	Op	4	1				
2	Mustang RT	82½	NA	13½		52	60*	18¼	7½	122½	70⅛	NA	RT					31.59	23.91	403	Op	4	1				
3	Mustang RS	82½	NA	13½		52	60*	18¼	7½	123⅝	70⅛	NA	RT					31.59	23.91	403	Op	4	1				
4	Mustang HA	87	11¾	13½		52	60*	18¼	7½	128	70⅛	NA	RT					31.59	23.91	403	Op	4	1				
5	33 Std.	88½	12¼	12½		54½	54½	21⅞	11½	134⅞	66⅜	75½	RT					40.43	37.31	509	Op	6	1				
6	33 RT	88½	9	16⅝		52⅝	60⅛	21⅞	12⅛	135	79	80½	RT					40.43	37.31	509	Op	6	1				
7	33 RS	88½	9	16⅝		52⅝	60⅛	21⅞	11½	135⅞	79	80½	RT					40.43	37.31	509	Op	6	1				
8	33 HA	100⅛	13½	16⅞		52⅝	60⅛	21⅞	11½	147½	79	80½	RT					40.43	37.31	509	Op	6	1				
9	55 Std.	88½	12	12½		57⅛	57⅛	23⅛	15½	145⅞	72½	83¼	RT					68.20	60.45	455	Op	4	1				
10	**McCormick** Cub	69	8¼	28½	1890	40	56	23	Ad	99	64	76	RT					4.00/12	3.24	9.75	8.89	388	Op	3	1	2.13	3.13	6.58
11	100	71	8½	22	2600	40	70	16	Ad	107	79	82	RT					5.00/15	9.24	22.00	19.86	NT	Op	4	1	2.38	3.63	6.88
12	100 HC	71	8¼	27	3020	44	68	19	Ad	115	79	88	RT					4.00/19	9.36	22.00	19.58	NT	Op	4	1	3.00	4.88	8.38
13	200	82	7½	23	3160	61½	100		Ad	123	91	85	RT					5.00/15	10/36	25.00	22.00	NT	Op	4	1	2.50	3.88	6.13
14	300	82	8½	19	4850	0	100	26	Ad	138	97	85	Op					5.50/16	11/38	37.50	33.00	NT	Op	5	1	1.68	2.58	3.48
15	300 HC	94	11¾	30	5720	60	84	30	Ad	149	86	98	RT					6.00/20	11/38	37.50	33.00	NT	Op	5	1	1.62	2.48	3.34
16	400	96	8¾	22½	5950	61½	100	26	Ad	141	107	95	Op					6.00/16	12/38	51.00	45.00	NT	Op	5	1	1.69	2.60	3.26
17	400 Diesel	96	8¾	22½	6365	61½	100	26	Ad	141	107	94	Op					6.00/16	12/38	48.30	43.90	NT	Op	5	1	1.69	2.60	3.26
18	400 HC	101	12	34	6520	60	84	30	Ad	155	88	107	RT					6.00/20	13/38	51.00	45.00	NT	Op	5	1	1.70	2.62	3.28
19	400 Diesel HC	101	12	34	6930	60	84	30	Ad	155	88	106	RT					6.00/20	13/38	48.30	43.90	NT	Op	5	1	1.70	2.62	3.28
20	Super WD-9	83			6430	52	66	18½	Ad	134	75	82	Op					7.50/18	14/34			$18	Op	5	1	2.38	3.13	4.50
21	Super WDR-9	83			7030	52	66	18½	Ad	140	83½	83	Op					7.50/18	15/34			NT	Op	5	1	2.50	3.38	4.75
22	WR-9S	83			6700	52	66	18½	Ad	140	83½	83	Op					7.50/18	15/34			NT	Op	5	1	2.50	3.38	4.75
	Minneapolis-Moline																										
23	Industrial R	86½	12	11½	3950	47¼	F	N	16	101	69	63½	RT					7.50/16	12.00/24	25.00	21.00	NT	Op	4	1	2.20	3.20	4.10
24	U	88	12	16	5300	58	76	22	14⅛	130⅝	71	72	RT					6.00/16	12/38	50.38	45.43	NT	Op	5	1	2.70	3.90	4.88
25	GB	82½	14	14⅝	6600	66	86	25	16½	137⅞	83	72½	RT					7.50/18	15/34	70.00	61.00	NT	Op	5	1	2.70	3.90	4.40
26	GBD	86½	16½	14⅝	7400	66	86	25	16½	151½	83	72½	RT					7.50/18	15/34	64.00	56.00	NT	Op	5	1	2.70	3.90	4.40
27	Z	72½	12	12¼	3750	48F	64	11¼	14¼	120	66	68	RT					6.50/16	11/38	37.48	33.38	NT	Op	5	1	2.40	3.60	4.60
28	U Diesel	90	12	16	5600	57	82	22	14⅛	130⅝	71	72	RT					6.00/16	12/38	42.00	37.00	NT	Op	5	1	2.70	3.90	4.88
29	UB Diesel	88	8½	25	5500	54½	84½	22	(	133	83	78½	RT					6.00/16	12/38	42.00	37.00	NT	Op	5	1	2.70	3.90	4.50
30	Industrial UTIL	87½	17	17½	6300	66	70	N	20¾	135⅛	84½	74½	RT					8.25/20	14.00/26	50.38	45.43	NT	Op	5	**	2.40	3.50	4.00
31	Industrial UTI	79½	16	17½	6300	66	70	N	20¾	127¾	77	73½	RT					8.25/20	14.00/26	50.38	45.43	NT	Op	5	1	2.40	3.50	4.00
32	UB	88	8½	25	5300	54½	84½	22	(	133	83	78½	RT					6.00/16	12/38	50.38	45.43	520	Op	5	1	2.70	3.90	4.88
33	UB Type E	96	8½	29	5500	54½	84½	22	(	141	83	78½	RT					6.00/16	12/38	42.00	37.00	NT	Op	5	1	2.70	3.90	4.50
34	UB Type N	88	8½	25	5500	54½	96	22	(	133	94½	78½	RT					6.00/16	12/38	42.00	37.00	NT	Op	5	1	2.70	3.90	4.50
35	ZB	82	8	25	3700	54	88	18¼	14⅝	126¼	83	74	RT					5.50/16	11/38	37.48	33.38	NT	Op	5	1	2.40	3.60	4.60
36	ZB Type E	90½	8	19⅝	3700	54	88	18¼	14⅝	134⅜	83	74	RT					5.50/16	11/38	37.48	33.38	NT	Op	5	1	2.40	3.60	4.60
37	ZB Type N	82½	8	19⅝	3700	54	96	18¼	14⅝	124⅜	91	74	RT					5.50/16	11/38	37.48	33.38	NT	Op	5	1	2.40	3.60	4.60
38	6F	79	7½	26	2730	52	76	19	15½	115⅛	63	75½	RT					5.00/15	10/28	27.00	25.00	409	Op	4	1	2.40	3.70	5.29
39	6G	74	9	20½	2880	40	68	20		110	66¼	75	RT					5.00/15	11/24	27.00	25.00	NT	Op	4	1	2.38	3.50	4.90
	Oliver																										
40	Super 55 HC	73	10	14½	3050	76	76	20½	Ad	120	66¼	53½*	RT					5.50/16	10/28	30.69	30.75	524	Op	6	2	1.46	2.24	3.00
41	Super 55 D	73	10	14½	3050	76	76	20½	Ad	120	66¼	53½*	RT					5.50/16	10/28	34.69	28.97	526	Op	6	2	1.46	2.24	3.00
42	RC Super 66 HC	86¼	9¼	18½	2800	58	88	20½	17	134⅛	80¼	73¼	RT					5.50/15	9/30			NT	Op	6	2	1.88	2.72	3.28
43	RC Super 66 D	86¼	9¼	18½	2850	60	88	20½	17	134⅛	80¼	73¼	RT					5.50/15	9/30			NT	Op	6	2	1.88	2.72	3.28
44	RC Super 77 HC	90½	9½	18½	3875	60	92½	20¾	15½	139⅛	80¼	79¾	RT					5.50/16	11/36			NT	Op	6	2	2.45	3.22	4.27
45	Std. Super 77 HC	81¾	12½	12½	3386		92½	20¾	12½	129½	69¾	69¼*	RT					5.50/16	12/26			NT	Op	6	2	2.48	3.27	4.33
46	Ind. Super 77 HC	81¾	12½	12½		52½	80½	20¾	12½	133¼	76¾	70*	RT					7.00/20	12.00/24			NT	Op	6	2	1.95	2.58	3.44
47	RC Super 77 D	90½	9¼	18½	4067	60	92½	20¾	15½	139⅛	80¼	79	RT					5.50/16	11/36			NT	Op	6	2	2.45	3.22	4.27
48	Std. Super 77 D	81¾	12½	12½	4066		92½	20¾	14⅞	129¾	69¾	69¼*	RT					5.50/16	12/26			NT	Op	6	2	2.48	3.27	4.33
49	Ind. Super 77 D	82½	12½	12½		52½	80½	20¾	13¼	133⅞	76¾	70*	RT					7.00/20	12.00/24			NT	Op	6	2	1.95	2.58	3.44
50	RC Super 88 HC	93½	9¾	18½	4740	60	92½	20¾	13¼	143⅞	80¼	75*	RT					6.00/16	12/38	38.69	49.81	525	Op	6	2	2.49	3.22	4.28
51	Std. Super 88 HC	82½	12½	13	4470	54	62	20½	13¼	135⅛	68½	69¼	RT					6.00/16	13/26	38.69	49.81	525	Op	6	2	2.48	3.22	4.27
52	Ind. Super 88 HC	82½	12½	12½		54	71	20½	14⅝	136	81½	70¾*	RT					7.00/20	13.00/24			NT	Op	6	2	2.00	2.58	3.44
53	RC Super 88 D	93½	9¾	18½	5072	60	92½	20¾	13¼	143⅞	80¼	75*	RT					6.00/16	12/38	38.63	49.58	527	Op	6	2	2.49	3.22	4.28
54	Std. Super 88 D	82½	12½	13	4902	54	62	20½	12½	135⅛	68½	69¼*	RT					6.00/16	13/36	38.63	49.58	527	Op	6	2	2.48	3.22	4.27
55	Ind. Super 88 D	81¾	12½	12½		54	71	20½	14⅝	136	81½	70¾*	RT					7.00/20	13.00/24			NT	Op	6	2	2.00	2.58	3.44
56	Super 99 HC	99	14½	12	6800	62		20	Ad	136½	76	90	RT					7.50/18	14/34			NT	Op	6	2	2.38	3.14	4.24
57	Super 99 D	99	14½	12	6800	62		20	Ad	136½	76	90	RT					7.50/18	14/34			NT	Op	6	2	2.38	3.14	4.24
58	**Sheppard** SD-2	88	7½	25	4600	56	84	23		125	Ad	70¼	RT					6.00/16	11/38			NT	Op	8	2	1.95	2.67	3.14
59	SD-3	92	8	28	4700	56	84	23		131	Ad	70¼	RT					6.00/16	12/38			NT	Op	8	2	1.95	2.67	3.14
60	SD-4	91½	9¼	28	6000	56	84	22½	19¼	130⅛	Ad	83½	RT					6.00/16	13/38			NT	Op	10	2	1.99	2.66	2.81
61	**Tigar** PTD	146	8	13	510	29	40	N	13	94	26	39	RT	5	12	4.00/9	5.00/12	9.10	4.90		St	1	1	9.00			
62		146	9	16	590	29	40	N	16	98	26	37	RT	8	16	4.00/8	6.00/16	9.10	6.00		St	1	1	9.00			

ABBREVIATIONS

^—With hub extension; 80" without.
+—Total capacity, final drive cases.
‡—Clearance at front axle.
††—Capacity final drive, each case.
*—Minimum.
■—Rated using gasoline.
^—At top of hood.
**—Included in transmission.
●●—With reversing transmission and 4 reverse speeds, from a low reverse of 1.8 and 5 other reverse speeds from 2.3 to 12.0 M.P.H.
•—To top of steering wheel.
°—In listed order: 1.64, 3.18; 1.64, 3.20; 2.14, 3.71; 2.14, 3.71; 2.58, 4.30; 2.61, 4.57; 2.08, 3.57; 2.35, 4.38; 2.54, 4.36; 2.05, 3.53; 2.35, 4.38; 2.54, 4.36; 2.05, 3.53; 2.62, 4.65; 2.62, 4.65.
‡‡—74½ in. to 98 in.
°—6.27 in 6th, 7.33 in 7th, road speed in 8th.
°°—5.20 in 6th, 6.10 in 7th, 10.50 in 8th, 1.98 in low reverse, 2.28 in high reverse.
°°—5.24 in 6th, 6.15 in 7th, road speed in 8th, 1.98 in low reverse, 2.28 in high reverse.
^—Includes filter.
^^—Low reverse, 1.57; high reverse, 6.20
(a)—Center, 4½; ends, 4½.
(b)—Roller bearing.
(c)—Low reverse, 3.00; high reverse, 4.20
(d)—Low reverse, 2.31; high reverse, 3.91.
(e)—Reverse 2.12 and 2nd speed 5.00.
(f)—Transmission driven, standard; engine driven, optional.
(h)—3 in. rear, front S.A.E. 212 roller-center 2.75.
(j)—15⅝ and 16½.
(l)—4.29 in 6th, 4.90 in 7th, 6.40 in 8th, 9.91 in 9th, 16.00 in 10th, 1.62 in low reverse and 2.51 in high reverse.

A—Air.
AC—A.C. Spark Plug Co.
Ad—Adjustable.
AL—Electric Auto-Lite Co.
Au—Auburn Clutch Co.
BB—Borg & Beck Div.
BBS—Bosch or Bendix-Scintilla.
Boe—American Bosch Corp.
Br—Briggs & Stratton Corp.
BS—Bendix-Scintilla Magneto Div.
Bu—Buda.
Car—Carter Carburetor Corp.
CH—Chain.
Chr—Chrysler Corp.
CL—Cam and Lever.
CMZ—Carter, Marvel-Schlebler or Zenith
Cont—Continental Motors Corp.
C-Z—Carter or Zenith.

For Directory of the Tractor Manufacturers listed above, see page 263

. . . WHEEL TYPE—*concluded*

Travel Speeds at Normal Governed Engine R.P.M. with Standard Wheels				ENGINE								FUEL											BELT PULLEY				CAPACITIES								
Fourth	Fifth	Sixth	Reverse	Make and Model	Number of Cylinders—Bore and Stroke (In.)	Piston Disp. (Cu. In.)	R.P.M. at Governed Speed	Valve Arrangement	Number of Main Bearings	Diameter of Main Bearings		Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type		Final Drive—Type	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.)		Starting Method	Line Number
.....	.....	.....	.....	Cont. F140	4-3⅛x4½	140	1800	L	3	2¼	G	D	AL	Zen	Don	Novi	P	Pu	BB	SP	SG	9¼	8¼	3044	WS	13	13	4	8	13½		Ele	1
.....	.....	.....	.....	Cont. F140	4-3⅛x4½	140	1800	L	3	2¼	G	D	AL	Zen	Don	Novi	P	Pu	BB	SP	SG	9¼	8¼	3044	WS	13	13	4	8	13½		Ele	2
.....	.....	.....	.....	Cont. F140	4-3⅛x4½	140	1800	L	3	2¼	G	D	AL	Zen	Don	Novi	P	Pu	BB	SP	SG	9¼	8¼	3044	WS	13	13	4	8	13½		Ele	3
.....	.....	.....	.....	Cont. F140	4-3⅛x4½	140	1800	L	3	2¼	G	D	AL	Zen	Don	Novi	P	Pu	BB	SP	SG	9¼	8¼	3044	WS	13	13	4	8	13½		Ele	4
.....	.....	.....	.....	Own. E201	4-3½x4½	201	1500	I	3	2½	G	D,O	AL	Mar	Don	Own	P	Pu	BB	SP	SG	13¼	8¼	3146	WS	16	19	7	48	••		Ele	5
.....	.....	.....	.....	Own. E201	4-3½x4½	201	1500	I	3	2½	G	D,O	AL	Mar	Don	Own	P	Pu	BB	SP	SG	13¼	8¼	3146	WS	16	19	7	48	••		Ele	6
.....	.....	.....	.....	Own. E201	4-3½x4½	201	1500	I	3	2½	G	D,O	AL	Mar	Don	Own	P	Pu	BB	SP	SG	13¼	8¼	3146	WS	16	19	7	48	••		Ele	7
.....	.....	.....	.....	Own. E201	4-3½x4½	201	1500	I	3	2½	G	D,O	AL	Mar	Don	Own	P	Pu	BB	SP	SG	13¼	8¼	3146	WS	16	19	7	48	••		Ele	8
.....	.....	.....	.....	Own. J382	4-4½x5	382	1350	I	3	3¼	G	D,LP,O	AL	Zen	Don	Own	P	Pu	BB	SP	SG	16	9½	3099	CL	28	27½	9	68	••		Ele	9
.....	.....	.....	2.36	Own. C60	4-2½x2¾	60	1600	L	3		G	N		Own	Don	Own	P	TS	RA	SP	SG	9	4½	1322	WG	2½	7½	3	2	1¼		Op	10
10.90	.....	.....	2.66	Own. C123	4-3⅛x4	123	1400	I	3		G	D,K		CMZ	Don	Own	P	Pu	RA	SP	SG	8¼	6	1157	WG	3¾	11	5	5	1¼		Ele	11
13.23	.....	.....	3.75	Own. C123	4-3⅛x4	123	1400	I	3		G	D,K		CMZ	Don	Own	P	Pu	RA	SP	SG	8¼	6	1157	WG	3¾	11	5	5	1¼		Ele	12
10.63	.....	.....	3.13	Own. C123	4-3⅛x4	123	1650	I	3		G	D,K		CMZ	Don	Own	P	Pu	RA	SP	SG	8¼	6	1365	WG	3¾	11	5	20	••		Ele	13
4.45	10.87	.....	2.10	Own. C169	4-3½x4½	169	1750	I	3		G	D,K		Own	Don	Own	P	Pu	Roc	SP	SG	9¼	7½	1031	WG	4¼	17	6	28	••		Ele	14
4.29	10.45	.....	2.02	Own. C169	4-3½x4½	169	1750	I	3		G	D,K		Own	Don	Own	P	Pu	Roc	SP	CH	9¼	7½	1031	WG	4¼	17	6	28	1½		Ele	15
4.53	11.27	.....	2.23	Own. C264	4-4x5½	264	1400	I	3		G	D,K		Own	Don	Own	P	Pu	O-R	SP	SG	11	7½	899	WG	6¼	18	8	48	••		Ele	16
4.53	11.27	.....	2.25	Own. D264	4-4x5½	264	1450	I	6		G	N		Own	Don	Own	P	Pu	O-R	SP	SG	11	7½	899	WG	7¼	18	9	48	••		Ele	17
4.67	11.36	.....	2.27	Own. C264	4-4x5½	264	1450	I	3		G	D,K		Own	Don	Own	P	Pu	O-R	SP	CH	11	7½	899	WG	6¼	18	8	48	••		Ele	18
4.67	11.36	.....	2.27	Own. D264	4-4x5½	264	1450	I	6		G	N		Own	Don	Own	P	Pu	O-R	SP	CH	11	7½	899	WG	7¼	18	9	48	1½		Ele	19
5.80	15.75	.....	2.86	Own. D350	4-4½x5½	350	1500	I	5		O	N		Own	Don	Own	P	Pu	O-R	SP	SG	14	8½	707	CL	9½	36	11	40	••		Ele	20
5.75	16.75	.....	3.13	Own. D350	4-4½x5½	350	1500	I	6		O	N		Own	Don	Own	P	Pu	Roc	SP	SG	14	8½	707	CL	9½	36	11	40	••		Ele	21
5.75	16.75	.....	3.13	Own. C335	4-4⅛x5½	335	1500	I	3		O	N		Own	Don	Own	P	Pu	Roc	SP	SG	14	8½	707	CL	8½	36	11	40	••		Ele	22
11.90	.....	.....	2.50	Own. EE	4-3½x4	168	1500	th	2	3	G	D	DR	Mar	Uni	Own	P	Pu	Roc	SP	SG	12¼	6	1900	FK	3½	14	7	18	••		HE	23
6.50	15.10	.....	2.10	Own. 263B	4-4½x5	263	1300	I	3	2⅜	G	D,LP	DR	Mar	Uni	Own	P	Pu	TD	SP	SG	16	7	741	FK	6	21½	9	52	••		HE	24
6.30	14.70	.....	2.10	Own. 403	4-4½x6	403	1300	I	3	2⅜	G	TF,LP	DR	Mar	Don	Own	P	Pu	TD	MD	SG	16	7	741	FK	12	28	9	52	••		Ele	25
6.30	14.70	.....	2.10	Own. D425	6-4½x5	425	1300	I	4	2⅜	O				Don	Bea	P	Pu	TD	MD	SG	16	7	741	FK	12	28	14	52	••		Ele	26
6.30	13.10	.....	2.20	Own. 206G	4-3½x5	207	1500	th	3	(h)	G	D,LP	DR	Mar	Don	Own	P	Pu	TD	SP	SG	15½	7	786	FK	3¾	19	7	28	••		HE	27
6.50	15.10	.....	2.10	Own. D283	4-4½x5	284	1200	I	3	2⅜	O				Bea		Don	Bea	P	Pu	TD	SP	SG	16	7	741	FK	6	21½	9	52	••		Ele	28
6.50	15.10	.....	2.10	Own. D283	4-4½x5	284	1300	I	3	2⅜	O				Bea		Don	Bea	P	Pu	Roc	SP	SG	16	7	741	SA	6	21½	9	52	••		Ele	29
5.80	13.50	.....	1.90	Own. 263B	4-4½x5	263	1300	I	3	2⅜	G	D	DR	Mar	Uni	Own	P	Pu	Roc	SP	SG	16	7	741	FK	6	21½	9	52	••		HE	30
5.80	13.50	.....	1.90	Own. 263B	4-4½x5	263	1300	I	3	2⅜	G	D	DR	Mar	Uni	Own	P	Pu	Roc	SP	SG	16	7	741	FK	6	21½	9	52	••		HE	31
6.50	15.10	.....	2.10	Own. 263B	4-4½x5	263	1300	I	3	2⅜	G	D,LP	DR	Mar	Uni	Own	P	Pu	Roc	SP	SG	16	7	741	SA	6	21½	9	52	••		Ele	32
6.50	15.10	.....	2.10	Own. D283	4-4½x5	284	1300	I	3	2⅜	O				Bea		Don	Bea	P	Pu	Roc	SP	SG	16	7	741	FK	6	21½	9	52	••		Ele	33
6.50	15.10	.....	2.10	Own. D283	4-4½x5	284	1300	I	3	2⅜	O				Bea		Don	Bea	P	Pu	Roc	SP	SG	16	7	741	SA	6	21½	9	52	••		Ele	34
6.30	13.10	.....	2.20	Own. 206G	4-3½x5	207	1500	th	3	(h)	G	D,LP	DR	Mar	Don	Own	P	Pu	Roc	SP	SG	15½	7	786	FK	3¾	19	7	28	••		Ele	35
6.30	13.10	.....	2.20	Own. 206G	4-3½x5	207	1500	th	3	(h)	G	D,LP	DR	Mar	Don	Own	P	Pu	Roc	SP	SG	15½	7	786	FK	3¾	19	7	28	••		Ele	36
6.30	13.10	.....	2.20	Own. 206G	4-3½x5	207	1500	th	3	(h)	G	D,LP	DR	Mar	Don	Own	P	Pu	Roc	SP	SG	15½	7	786	SA	3¾	19	7	28	••		Ele	37
13.00	.....	.....	2.86	He 1XB3SL	4-3½x4	133	1800	L	3	2	G	K	DR	Mar	Var	Novi	P	Pu	Roc	SP	SG	10	6½	1160	WG	2½	12	5	9	3		Ele	38
12.80	.....	.....	2.70	He 1XB3SL	4-3½x4	133	1800	L	3	2	G	K	DR	Mar	Var	Novi	P	Pu	Roc	SP	SG	10	6½	1160	.....	2½	12	5	9	1½		Ele	39
4.62	5.54	11.41	*	Own. 55HC	4-3½x3¾	144	1600	I	3	2¼	G	.....	DR	M-C	Don	Own	PS	Pu	Au	SP	SG	9	6½	1319	FK	3½	13	4	20	••		Ele	40
4.62	5.54	11.41	*	Own. 55D	4-3½x3¾	144	1600	I	3	2¼	O	.....		Bea	Don	Bea	PS	Pu	Au	SP	SG	9	6½	1319	FK	3½	13	4	20	••		Ele	41
4.71	5.54	9.56	*	Own. 66HC	4-3½x3¾	144	1600	I	3	2¼	G	.....	DR	M-C	Don	Own	PS	Pu	BB	SP	SG	9½	7¼	1232	SA	3	12¾	4	16	••		Ele	42
4.71	5.54	9.56	*	Own. 66D	4-3½x3¾	144	1600	I	3	2¼	O	.....		Bea	Don	Bea	PS	Pu	BB	SP	SG	9½	7¼	1232	SA	3	12¾	4	16	••		Ele	43
4.62	5.52	11.47	*	Own. 77HC	6-3½x3¾	216	1600	I	4	2¼	G	.....	DR	M-C	Don	Own	PS	Pu	BB	SP	SG	11¼	7¼	992	SA	4¼	16¾	5	16	••		Ele	44
5.70	6.98	11.68	*	Own. 77HC	6-3½x3¾	216	1600	I	4	2¼	G	.....	DR	M-C	Don	Own	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	16¾	5	16	••		Ele	45
4.62	5.52	11.47	*	Own. 77HC	6-3½x3¾	216	1600	I	4	2¼	G	.....	DR	M-C	Don	Own	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	16¾	5	16	••		Ele	46
5.62	6.98	15.80	*	Own. 77D	6-3½x3¾	216	1600	I	4	2¼	O	.....		Bea	Don	Bea	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	17	5	16	••		Ele	47
5.70	6.98	11.68	*	Own. 77D	6-3½x3¾	216	1600	I	4	2¼	O	.....		Bea	Don	Bea	PS	Pu	BB	SP		11¼	7¼	992	FK	4¼	17	5	16	••		Ele	48
4.62	5.06	15.80	*	Own. 77D	6-3½x3¾	216	1600	I	4	2¼	O	.....		Bea	Don	Bea	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	17	5	16	••		Ele	49
5.55	6.82	11.75	*	Own. 88HC	6-3½x4	265	1600	I	4	2½	G	.....	DR	M-C	Don	Own	PS	Pu	BB	SP	SG	11¼	7¼	992	SA	4¼	20¼	6	16	••		Ele	50
5.53	6.80	11.70	*	Own.	6-3½x4	265	1600	I	4	2½	G	.....	DR	M-C	Don	Own	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	20¼	6	16	••		Ele	51
4.46	9.27	15.96	*	Own. 88HC	6-3½x4	265	1600	I	4	2½	G	.....	DR	M-C	Don	Own	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	20¼	6	16	••		Ele	52
5.55	6.82	11.75	*	Own. 88D	6-3½x4	265	1600	I	4	2½	O	.....		Bea	Don	Bea	PS	Pu	BB	SP	SG	11¼	7¼	992	SA	4¼	18¼	6	16	••		Ele	53
5.53	6.80	11.70	*	Own.	6-3½x4	265	1600	I	4	2½	O	.....		Bea	Don	Bea	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	18¼	6	16	••		Ele	54
4.46	9.27	15.96	*	Own. 88D	6-3½x4	265	1600	I	4	2½	O	.....		Bea	Don	Bea	PS	Pu	BB	SP	SG	11¼	7¼	992	FK	4¼	18¼	6	16	••		Ele	55
5.59	7.01	12.45	*	Own. 99HC	6-4x4	302	1675	I	4	2½	G	.....	DR	Mar	Don	Own	P	Pu	BB	SP	SG	12	9	1000	FK	6½	30	6	32	.....		Ele	56
5.59	7.01	12.45	*	Own. 99D	6-4x4	302	1675	I	4	2½	O	.....		Bea	Don	Bea	P	Pu	BB	SP	SG	12	9	1000	FK	6½	30	6	32	.....		Ele	57
3.72	4.53	*	(d)	Own. 13E	2-4½x5	142	1650	I	3	2¼	O	.....	.....	Own	.....	Don	Own	P	Pu	Roc	SP	SG	8¼	7½	1350	.....	7	15	12	25	••		Ele	58
3.72	4.53	*	(d)	Own. 8E	3-4½x5	212	1650	I	4	2¼	O	.....	.....	Own	.....	Don	Own	P	Pu	Roc	SP	SG	8¼	7½	1350	.....	7½	15	13	25	••		Ele	59
3.28	3.98	(1)	(1)	Own. 16	4-4½x5	319	1650	I	5	2½	O	.....	.....	Own	.....	Don	Own	P	Pu	Roc	SP	SG	10	7½	1150	.....	7½	22	18	32	••		Ele	60
.....	.....	.....	5.90	Br. 14	1-2½x2½	14	3200	L	.....	.....	G	.....	.....	Br	Br	Uni	Br	PS	A	TD	MD	SGC	.....	.....	.....	SA	.....	1	½	1	1		HC	61
.....	.....	.....	5.00	Br. 23	1-3x3	19	3300	L	.....	.....	G	.....	.....	Br	Br	Uni	Br	PS	A	TD	MD	SGC	.....	.....	.....	SA	.....	1½	½	1	1		HC	62

D—Distillate.
DA—Divided Axle.
DFS—Divided axle, front axle knuckle or solid axle.
DO—Double plate operating in oil.
Don—Donaldson Co.
DR—Delco-Remy Div.
DS—Divided or solid axle.
Ele—Electric starting.
F—Front wheel tread.
FK—Front axle knuckle.
FM—Fairbanks Morse & Co.
FO—Fork type.
G—Gasoline.
Han—Handy Governor Corp.
HC—Hand crank.
He—Hercules Motor Corp.
HE—Hand or Electric.
Hel—Helical gear.
HH—Hoade-Hershey.
Hol—Holley Carburetor Co.
I—In head (Valves).
IG—Internal gear.
th—Horizontal—in head (Valves).
K—Kerosene.
L—"L" head (Valves).
Lo—Long Mfg. Co.
LP—Liquid petroleum gas.
Mar—Marvel-Schebler Carburetor Div.
M-C—Marvel-Schebler or Carter.
MD—Multiple disc, operating dry.
MS-Z—Marvel-Schebler or Zenith.
M-Z—Marvel or Zenith.
N—No or none.
NA—Not available.
Novi—Novi Equipment Co.
NS—Non-circulating splash.
NT—Not tested.
O—Diesel fuel.
Op—Optional.
O-R—Own or Rockford.
P—Pressure.
Pie—Pierce Governor Co.
PS—Pressure and splash. Pe—Pump.
RA—Rockford or Auburn.
Roc—Rockford Drilling Machine Div.
RT—Rubber tires.
S—Splash.
SA—Solid axle.
SB—Spiral bevel gear.
SF—Solid axle or front axle knuckle.
SG—Spur gear.
SGC—Spur gear and chain.
SIG—Internal spur gear.
SP—Single plate, dry. St—Standard.
TD—Twin Disc Clutch Co.
TF—Tractor fuel.
TS—Thermo-syphon.
Uni—United Air Cleaner Div.
Var—Various.
Vor—Vortex Mfg. Co.
Wico—Wico Electric Co.
WG—Worm gear.
Wis—Wisconsin Motor Corp.
WS—Worm and sector.
Zen—Zenith Carburetor Div.

For Directory of the Tractor Manufacturers listed above, see page 263





TRACK-LAYING TYPES

Line Number	TRACTOR MAKE AND MODEL	GENERAL: Minimum Turning Radius—Outside (Ft.) (Minimum Tread)	GENERAL: Ground Clearance (In.)	GENERAL: Shipping Weight (Lb.) Standard Shoe (Minimum Tread)	GENERAL: Tread: Minimum (In.)	GENERAL: Tread: Maximum (In.)	DRAWBAR: Lateral Adjustment—At Pin (In.)	DRAWBAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width—Maximum (In.) (Minimum Tread)	OVERALL DIMENSIONS: Height to Highest Point (In.)	TRACK: Width or Shoe—Standard (In.)	TRACK: Length on Ground (In.)	HP RATING: Belt	HP RATING: Drawbar	Power Take-off	No. of Forward Speeds	No. of Reverse Speeds	MAXIMUM DRAWBAR PULL AT NORMAL GOVERNED ENGINE R.P.M.: First Gear (Lb.)	Second Gear (Lb.)	Third Gear (Lb.)	Fourth Gear (Lb.)	Fifth Gear (Lb.)	Sixth Gear (Lb.)	Travel Speeds at Normal Governed Engine R.P.M.: First Gear (M.P.H.)	Second Gear (M.P.H.)	Third Gear (M.P.H.)	Fourth Gear (M.P.H.)
1	Allis-Chalmers HD-5	8½	11¼	11250	44	60	21	13½	124⅞	62¼	69¾	12	64½	50.00	40.00	Op	5	1	10060	5970	4270	3310	2200		1.50	2.44	3.30	3.96
2	HD-6	8½	13⅛	16800		74	28½	16½	150	95½	73½	16	85¾	84.00	72.00	Op	6	3	19030	12240	8690	6590	5410	3820	1.45	2.10	2.90	3.80
3	HD-15	8½	14⅛	27950		74	36	17½	172½	96¼	85½	20	96½	124.00	109.00	Op	6	3	29400	19080	13100	9670	8050	5840	1.45	2.10	3.00	3.90
4	HD-20	10¼	16½	41000		84	44	19½	190¾	109¼	94⅞	24	106½	175.00			↑	R	▲	↑	↑	↑	↑	↑	▲	↑	↑	↑
5	Caterpillar D-2		9	7175	40	60	20	12	167½	55¾	61¾	12	80½	43.00	38.00	Op	5	1	7250	5179	4110	3270	2145		1.86	2.70	3.20	3.90
6	D-4		11½	10375	44	66	21½	14½	128¼	62	69¾	13	81½	54.00	48.00	Op	5	1	9550	6830	5270	4060	2570		1.90	2.70	3.40	4.20
7	D-6		12½	17136	66	74	27¼	14	147½	79½	75¾	16	85¾	85.00	75.00	Op	5	4	17000	10900	7480	5150	3520		1.70	2.60	3.60	5.00
8	D-7		15½	25825	74	74	36	17½	167½	97	81¼	20	94¾		90.00	Op	5	4	22750	14310	9660	6390	4610		1.40	2.20	3.20	4.60
9	D-8		16½	37150	78	78	43	18½	192½	103¾	86	22	99¾		150.00	Op	5	3	29200	20000	15000	11600	7580		1.90	2.70	3.50	4.50
10	John Deere 40-C	7	12	4200	36	48	2½	12¾	102	67¼	64	10	(c)	24.99	20.14	Op	4	1	4515	3433	2483	1100			.70	2.14	2.93	5.30
11	I.H.C. T-6	8½	8¼	7345	40	60	19¾	12½	104	53	62½	12	58¼	38.96	32.92	Op	5	1	7652	5215	3679	2767	1758		1.52	2.21	3.12	3.83
12	TD-6	8½	8¼	7565	40	60	19¾	12½	104	53	62½	12	58¼	40.29	33.76	Op	5	1	8131	5514	3742	2992	1905		1.52	2.21	3.12	3.83
13	T-9	6	10½	10365	44	60	19½	13½	114	59½	66¾	13	63½	48.89	42.98	Op	5	1	9868	6904	4556	3650	2434		1.56	2.20	3.04	3.88
14	TD-9	6	10½	10605	44	60	19½	13½	114	59½	66¾	13	63½	48.91	41.31	Op	5	1	9909	6872	4752	3626	2419		1.56	2.20	3.04	3.88
15	TD-14A	7½	11¾	17700	56	74	27½	13½	134½	74½	73¾	16	63½	75.00	66.00	Op	6	2	14652	11772	8667	6691	5005	3812	1.57	2.05	2.65	3.38
16	TD-18A	8½	14	25820		74	31½	15½	158¼	82¼	79	20	84½	101.98	89.29	Op	6	2	20234	15276	11754	8990	6502	4870	1.66	2.16	2.70	3.52
17	TD-24	9½	13½	39670		60	39¼	17½	182½	102	90	22	104½		161.67	Op	8	8	37160	28492	23416	16178	13124	††	1.90	2.03	2.45	3.12
18	TD-24TC	9½	13½	40800		60	39¼	17½	182½	102	89½	22	104½				8	8							2.70	3.90	5.50	6.90
19	Oliver Crawler OC-3	9½	20	3182	31	60	25	14½	100	52½	56½	6	80	25.36	21.85	Op	3	1	3840	2512	1472				2.01	3.19	5.24	
20	Crawler AG-4	7½	13½	7080	42	60	21	14½	103½	56	64+	12	82	38.00	30.60	Op	3	1	6020	4160	2640				1.78	2.82	3.74	
21	Crawler AD	7½	13½	7982	42	60	21	14½	101½	56	64+	12	82	38.00	30.50	Op	3	1	6360	4520	2800				1.78	2.82	3.74	
22	OC-12G	8½	11¼	9800	44	60	16½	16½	109¾	76	67¾	14	67½	52.00	42.00		4	2	10570	7265	4835	2865			1.53	2.24	3.20	5.04
23	OC-12D	8½	11¼	10140	44	60	16½	16½	109¾	76	67¾	14	67½	52.70	45.10	Op	4	2	10960	7405	4930	2890			1.53	2.24	3.20	5.04
24	Crawler DG	9	12¼	12532	40	61	18½	17¼	128	69	67+	16	76¼	71.40	60.67	Op	4	2	14582	9382	7188	3964			1.45	2.28	3.04	4.85
25	Crawler DD	9	12¼	13351	46	61	18½	17¼	128	69	67+	16	76¼	74.43	60.47	Op	4	2	14735	9632	7277	3979			1.45	2.28	3.04	4.85
26	OC-18	12½	16½	32000	78		30½	19½	167¼	111¾	82½+	22	100¼		133.02	Op	4	2	31028	18513	11788	6880			1.50	2.61	3.78	5.45
27	OC-6	8¾	20	5280	32	60	17¼	15¼	121½	62¼	56‡‡	8	54½	37.90	32.99	Op	6	2	6215	4581	3426	2532	1990	897	1.88	2.44	3.23	4.19
28	OC-6	8¾	20	5425	32	66	17¼	15¼	121½	62¼	56‡‡	8	54½	37.40	34.74	Op	6	2	6770	5294	3708	2729	2164	922	1.88	2.44	3.23	4.19

ABBREVIATIONS

♦—Exclusive of tail pipes.
‡—At dash board.
‡‡—Total for all cases.
*—With converter.
†—2nd speed range 0-7 mph with 35,000 lb. pull.
●—Low reverse speed range 0-5.5 mph with 36,900 lb. pull.
▲—1st speed range 0-3 mph with 36,900 lb. pull.
*—Four reverse speeds, 2nd, 3.5; 3rd, 5.3; 4th, 6.6.
●●—200 including steering case.
♦♦—9300 lb. in 6th gear, 7043 lb. in 7th, 4892 lb. in 8th.
▲▲—5.15 mph in 6th gear, 6.15 mph in 7th, 7.83 mph in 8th.
‡‡—8 reverse speeds ranging from 1.56 to 7.67.
‡‡—192 qts. including rear main frame cases.
*—Electric starter optional.
**—Included in transmission.
(c)—4 roller, 56; 5 roller, 60¾.
A-R—Auburn or Rockford.
Aub—Auburn Clutch Co.
Bos—American Bosch Co.
Clu—Clutches.
Cont—Continental Motors Corp.
D—Distillate.
Dif—Differential.
De—Double plate, operating in oil.
Don—Donaldson Co.
DP—Double plate dry.
DR—Delco Remy Div.

For Directory of the Tractor Manufacturers listed above, see page 263

Tractors: Quantity and Value of Domestic Shipments, By Farm and Non-Farm Use, 1952 and 1953

TYPE OF TRACTOR	TOTAL 1953	TOTAL 1952	FARM USE 1953	FARM USE 1952	NON-FARM USE 1953	NON-FARM USE 1952
NUMBER						
Complete Tractors, total	573,213	991,992	543,348	957,993	29,865	33,519
Wheel-type (except contractors' off-highway), total	334,311	357,305	328,201	347,834	6,110	9,561
All-purpose (for row-type work)	316,661	329,424	316,661	327,907		1,517
Other than all-purpose	17,650	27,961	11,540	19,927	6,110	8,034
Wheel-type (contractors' off-highway)	2,080	2,961			2,080	2,961
Tracklaying	31,692	33,586	10,827	12,698	21,865	20,967
Garden	205,120	197,540	205,120	197,540		
VALUE (thousands of dollars)						
TOTAL						
Complete tractors, total	$970,661	$1,024,594	$646,226	$674,339	$333,435	$350,295
Wheel-type (except contractors' off-highway), total	729,925	743,543	514,036	524,196	215,889	219,347
All purpose (for row-type work)	463,218	472,233	445,906	451,057	17,312	21,176
Other than all-purpose	420,300	410,468	420,300	408,299		2,169
Wheel-type (contractors' off-highway)	42,918	61,775	25,606	42,758	17,312	19,017
Tracklaying	31,763	44,614			31,763	44,614
Garden	205,600	199,352	30,884	45,795	166,814	153,557
Garden	26,246	27,344	26,246	27,344		
Attachments	42,050	47,312	30,990	36,490	11,060	10,822
Parts	286,670	233,739	100,192	113,653	186,478	120,086

TRACK-LAYING TYPES

Travel Speeds at Normal Governed Engine R.P.M.				ENGINE										FUEL															BELT PULLEY			STEERING	CAPACITIES							
Fifth Gear (M.P.H.)	Sixth Gear (M.P.H.)	Low Reverse (M.P.H.)	High Reverse (M.P.H.)	Make and Model	Cycle	No. of Cylinders—Bore and Stroke (In.)	Displacement (Cu. In.)	R.P.M. at Governed Speed	S.A.E. or Tax Hp.	Valve Arrangement	No. of Main Bearings	Diam. Main Bearings (In.)	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Drive Type to Traction Members	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.) (Each Case)	Starting Method	Line Number
5.50		2.00		GM	2-71	2 2-4½x5	142	1800	14.5	I	3	3½	O		No	GM	Uni	GM	P	Pu	Asb SP	SG	12	8¼	983	Clu	3½	37	8	20	12	Ele	1
4.45	5.70	1.60	4.40	GM	4-71	2 4-4½x5	284	1800	28.9	I	5	3½	O		No	GM	Uni	GM	P	Pu	Rec SP	SG	13⅝	10	929	Clu	7½	55	16	27	13	Ele	2
4.45	5.80	1.50	4.50	GM	6-71	2 6-4½x5	426	1800	43.4	I	7	3½	O		No	GM	Uni	GM	P	Pu	Rec SP	SG	19	15	693	Clu	11¾	91	26	34	22	Ele	3
		■		GM	6-110	2 6-5x5.6	660	1700	60.0	I	7	4	O		No	GM	Uni	GM	P	Pu	TD 4SP	SG	20	15	430	Clu	18	120	33	39	35	Ele	4
5.50		2.20		Own	D2	4 4-4x5	252	1650	25.6	I	5	2⅝	D			Own	Don	Own	P	Pu	Own SP	SG	12	7½	1001	Clu	7½	26	14	6	4½	GE	5
6.10		2.20		Own	D4	4 4-4½x5½	350	1600	32.4	I	5	3½	D			Own	Don	Own	P	Pu	Own SP	SG	12	8½	960	Clu	11	30	15	18	7	GE	6
6.00		2.00	6.20	Own	D6	6 4-4½x5½	525	1600	48.6	I	7	3½	D			Own	Don	Own	P	Pu	Own DO	SG	13⅝	13	896	Clu	14½	48	22	45	9½	GE	7
6.00		1.80		Own	D7	4 4-5½x8	831	1000	52.9	I	5	3⅝	D			Own	Don	Own	P	Pu	Own DO	SG	17½	15	692	Clu	17	70	22	43	23	GE	8
5.00		1.90	5.80	Own	D8	6 4-5½x8	1246	1200	79.3	I	7	3⅝	D			Own	Don	Own	P	Pu	Own DO	SG	14⅞	15	846	Clu	28	90	34	41	20	GE	9
		1.75		Own	40	4 2-4x4	101	1850	12.8	I	2	2½	G	D	DR	Mar	Don	Own	P	T5	Asb SP	SG	9½	6¾	1297	Clu	3½	10	5	9½	1¾‡	Ele	10
5.41		1.73		Own	6	4 4-3⅞x5¼	248	1450	24.0	I	3	2¾	G	D,K	Own	Own	Don	Own	P	Pu	Rec SP	SG	11	8¼	811	Clu	9¼	20	9	18	1	Ele	11
5.41		1.73		Own	D6	4 4-3⅞x5¼	248	1400	24.0	I	5	3⅝	O			Own	Don	Own	P	Pu	Rec SP	SG	11	8¼	811	Clu	10½	20	9	18	1	Ele	12
6.38		1.75		Own	9	4 4-4½x5½	335	1400	31.0	I	3	3¼	G	D,K	Own	Own	Don	Own	P	Pu	Rec SP	SG	11	8¼	678	Clu	12	31	11	22	1½	Ele	13
5.38		1.75		Own	D9	4 4-4½x5½	335	1400	31.0	I	5	4½	O			Own	Don	Own	P	Pu	Rec SP	SG	11	8½	678	Clu	13	31	11	22	1½	Ele	14
4.38	5.06	1.58	3.38	Own	D-14A	4 4-4¾x6½	460	1400	36.1	I	5	3¼	O			Own	Don	Own	P	Pu	Rec SP	SG	11¾	11	875	Clu	19	45	16	24	3	Ele	15
4.64	5.73	1.67	3.54	Own	D-18A	6 4-4¾x6½	691	1350	54.1	I	7	3½	O			Own	Don	Own	P	Pu	Rec SP	SG	11¾	11	944	Clu	28	66	26	30	8½	Ele	16
4.06	^^	††	††	Own	D24	6 5-5½x7	1091	1400	79.3	I	7	4½	O			Own	Don	Own	P	Pu	Roc DP	SG				PL	37	85	30	44	10	Ele	17
		2.70	*	Own	D24	6 5-5½x7	1091	1800	77.4	I	7	4½	O			Own	Don		Own	P	Pu	TD TC	SG	N			PL	38	135	30	**	42‡‡	Ele	18
		2.33		Herc	IXB3	4 4-3½x4	133	1700	16.9	L	3	2	G	K	Wi	Mar	Ver	Han	P	Pu	Lg SP	SG	8½	8½	2310	Dif	2⅝	12	6½	6	⅝	HC*	19
		1.38		Cont	F226	4 6-3⅛x4⅝	226	1530	26.3	L	4	2⅛	G	K	Bee	Til	Ver	Novi	P	Pu	Lg DP	SG	10½	9½	1130	Dif	5	16	9	32	**	HC*	20
		1.38		Herc	DOOC	4 4-4x4½	226	1530	25.6	I	5	3	O			Bee	Ver	Bee	P	Pu	Lg DP	SG	10½	9½	1130	Dif	5½	16	13	32	**	Ele	21
		1.65	3.44	Herc	JXLD	4 6-4x4½	339	1750	38.4	L	7	2½	G	K	DR	Mar	Ver	Pie	P	Pu	Lg DP	SG	12	8½	1034	Dif	6	35	7	24	14‡‡	Ele	22
		1.65	3.44	Herc	DJXC	4 6-3⅝x4½	298	1750	33.8	I	7	3	O			RM	Ver	Bee	P	Pu	Lg DP	SG	12	8½	1034	Dif	5	35	12	24	14‡‡	Ele	23
		1.72	3.62	Herc	RXC	4 6-4½x5½	529	1300	51.3	L	7	3	G		DR	Mar	Ver	Pie	P	Pu	Lg DP	SG	13	11	958	Dif	10¼	30	12	52	**	Ele	24
		1.72	3.62	Herc	DRXB	4 6-4¾x5½	474	1300	45.9	I	7	3½	O			Bee	Ver	Bee	P	Pu	Lg DP	SG	13	11	958	Dif	10½	30	16	52	**	Ele	25
		1.63	3.53	Herc	DFXE	4 6-5½x6	665	1500	75.9	I	7	4½	O			Bee	Ver	Bee	P	Pu	Roc OD	SG	N			Dif	15½	66	34	104	16	Ele	26
5.15	5.85	1.92	3.31	Own	OC6	4 6-3⅛x3¾	194	1600	26.3	I	4	2½	G		DR	Mar	Ver	Own	Pu	Pu	Lg SP	SG	10	6¾	1184	Dif	4¼	16½	6	20	4½	Ele	27
5.15	5.85	1.92	3.31	Own	OC6	4 6-3⅛x3¾	194	1600	26.3	I	4	2½	G			Bee	Ver	Bee	Pu	Pu	Lg SP	SG	10	6¾	1184	Dif	4½	16½	6	20	4½	Ele	28

Ele—Electric.
G—Gasoline.
GE—Independent gas engine.
GM—General Motors Corp.
Han—Handy Governor Corp.
HC—Hand crank.
HE—Hand crank or electric.
Herc—Hercules Motor Corp.
I—In head (Valves).
K—Kerosene.
L—"L" head (Valves).
Lg—Long Mfg. Div.
Mar—Marvel-Schebler Carburetor Div.
N—No or none.
Novi—Xovi Equipment Co.
O—Diesel fuel.
OD—Over center, double plate.
Op—Optional.
P—Pressure.
Pie—Pierce Governor Corp.
PL—Planetary.
Po—Pressure and splash.
Pu—Pump.
RM—Roosa-Master.
Roc—Rockford Drilling Machine Div.
SG—Spur gear.
SP—Single plate, dry.
TC—Torque converter.
TD—Twin Disc Clutch Co.
Til—Tillotson Mfg. Co.
TS—Thermo-syphon.
Uni—United Air Cleaners Div.
Ver—Vorton Mfg. Co.
Wi—Wico Electric Co.
Zen—Zenith Carburetor Div.

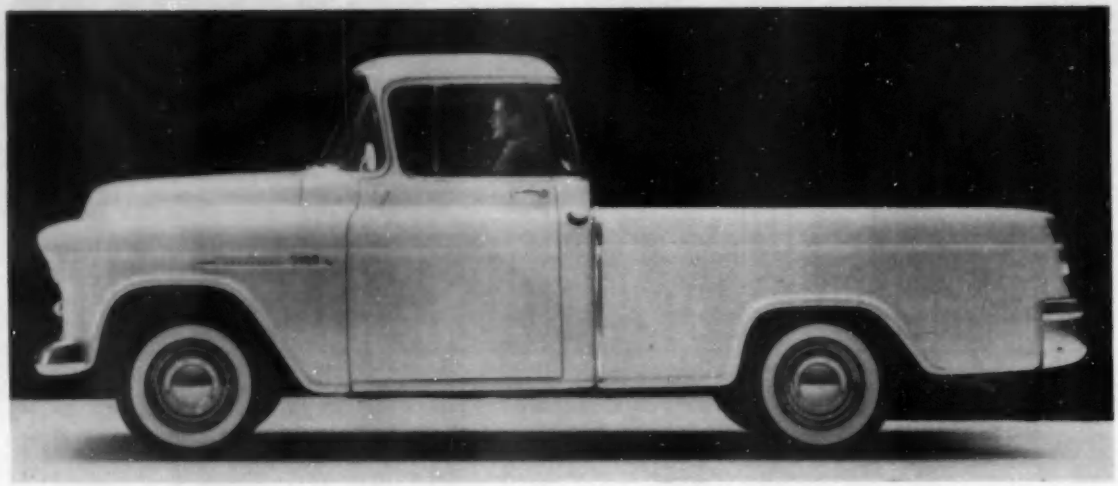
For Directory of the Tractor Manufacturers listed above, see page 263

Military Cargo Vehicle Specifications

MODEL	Manufacturer	PAY-LOAD (Tons) Cross Country	PAY-LOAD (Tons) Highway	WEIGHT (Lbs.) Empty	WEIGHT (Lbs.) Fully Equipped	OVERALL DIMENSIONS (In.) Width	OVERALL DIMENSIONS (In.) Length	OVERALL DIMENSIONS (In.) Height	Axle Ground Clearance (In.)	ENGINE Make	ENGINE No. of Cylinders, Bore and Stroke	ENGINE Displacement (Cu. In.)	ENGINE Fuel Used	ENGINE Cooling Medium	ENGINE Max. Brake Hp. at R.P.M.	Maximum speed (Mph)	Max. Fording Depth (In.)	Cruising Range—Miles	TRANSMISSION Make	TRANSMISSION Type	TRANSMISSION No. of Forward Speeds	TRANSMISSION No. of Reverse Speeds	TRANSMISSION Transfer Case	Differential—Type	Suspension—Type	SERVICE BRAKES Actuated by	SERVICE BRAKES Type	Wheelbase (In.)
M38A1	WM	¼	½	2,885	3,465	62	130¼	73¼	9¼	WM	4-3½x4½	134.2	G	Liq	72-4000	60	72	200	WM	Co	3	1	2s	Co	SE		Hd	81
M37	Do	¾	1	5,950*	7,900*	73½	189¼*	89½	10¾	Do	6-3½x4½	230.2	G	Liq	94-3200	55	72	225	Do	Co	4	1	2s	Co	SE		Hd	112
M36	Rec	2½	3	12,880*	18,230*	96	274¾*	111¼	10¾	Rec	6-4½x4½	331.0	G	Liq	146-3400	52	72	280	Spi	Co	5	1	2s	Co	Bcp	Air	Hd	154
M211	GM	2½	3	13,580*	18,930*	96	269¼*	112¼	12	GM	6-4x6	301.5	G	Liq	145-3400	50	72	300	GM	Hy	8	2	†	Co	Bcp	Air	Hd	156
M54	IH	5	10	19,945*	30,285*	97	314¼*	116	11½	CM	6-4½x5½	602.0	G	Liq	224-2900	53	72	214	Spi	Co	6	1	2s	Co	Bcp	Air	Hd	179
M5A1●	AC	7½		44,560*	63,000*	123½	265¼*	120	10½	CM	6-5½x5½	959.9	G	Air	500-2800	41	60	180	GM	Cr	2	1				Inb	Md	Mo	157½‡
M76●	GM	1½		9,080	12,080	96	189	96¾	16¼	CM	4-4½x4	268.0	G	Air	127-3200	28	Am	160	GM	Cr	2	1				Inb	Md	Mo	96½‡

ABBREVIATIONS

*—With winch.
●—Tracked vehicles.
†—2 speed reduction unit on transmission.
‡—Track contact length.
2s—Two speed.
AC—Allis-Chalmers Mfg. Co.
Am—Amphibious.
Bcp—Bogie constant parallel arm (leaf springs).
Co—Conventional.
CM—Continental Motors Corp.
Cr—Cross drive.
Do—Dodge Division.
G—Gasoline.
GM—General Motors Corp.
Hd—Hydraulic.
Hy—Hydramatic.
IH—International Harvester Co.
Inb—Individual torsion bar.
Liq—Liquid.
Md—Multiple disc.
Mo—Mechanical.
SE—Semi-elliptic.
Spi—Spicer Mfg. Div.
WM—Willys Motors.



A new idea in retail delivery trucks called the Cameo Carrier, was designed for exclusive shops which have sought a modernistic unit in keeping with their merchandise. Note how fiber glass side panels are carried flush with the cab to impart a smooth, clean line. The body color is ivory.



Although overall lengths are shorter to aid maneuverability, load area has been appreciably expanded on 1955 Chevrolet panel trucks. This is primarily due to increased load-compartment widths. The compartment floor has also been lowered to facilitate loading.

COMPLETE NEW LINE of Chevrolet Truck Models

CHEVROLET introduces a fresh approach to the design of commercial cars and trucks in a completely new line of 1955 models. These new vehicles climax a two-year development program to produce highway carriers that would answer more closely the specialized demands of modern traffic conditions. The line consists of 75 models on 15 wheelbases in the light, medium and heavy-duty field, an increase of four wheelbases over 1954 models.

Following are a few of the highspots of the 1955 models: Most wheelbases have been reduced, some as much as eight inches, as it has been found that restricted parking and loading facilities of many businesses make excessive vehicular lengths objectionable. Wider panel bodies are used with a consequent gain in load space. The new width should be particularly pleasing to truckers handling bulk loads. An entirely new and distinctive pickup, called the Cameo Carrier, which makes pioneering use of reinforced glass fiber panels, has been introduced. A reduction has been made in maximum cab heights, up to seven inches on brand new Low-Cab-Forward models. The new V-8 engine is standard on this model.

The new Chevrolet trucks have wider front treads, straight frame sidemembers, and improved suspensions.

A new ventilation system places the inlet across the top of the cowl and assures dry air even in inclement weather. Cabs are also roomier and contain more comfortable seats with added latitude in adjustment. Notable is an appreciable gain in window area, adding up to 36 per cent in visibility and marked in all models by "sweep-sight" windshields.

(*Turn to page* 412, *please*)



"The automotive industry knows but one way to go— and that's ahead"!

Roy D. Ingersoll

President

BORG-WARNER CORPORATION

Borg-Warner

ENGINEERING B-W PRODUCTION

THESE UNITS FORM BORG-WARNER, Executive Offices, Chicago: ATKINS SAW • BORG & BECK • BORG-WARNER INTERNATIONAL • BORG-WARNER SERVICE PARTS • CALUMET STEEL • DETROIT GEAR • FRANKLIN STEEL • HYDRALINE PRODUCTS • INGERSOLL CONDITIONED AIR • INGERSOLL KALAMAZOO INGERSOLL PRODUCTS • INGERSOLL STEEL • LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. • MARBON CHEMICAL • MARVEL-SCHEBLER PRODUCTS • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN CO., LTD. • NORGE • PESCO PRODUCTS • REFLECTAL CORP. • ROCKFORD CLUTCH SPRING DIVISION • WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD. • WAUSAU • WESTON HYDRAULICS, LTD. • WOOSTER DIVISION



one way...

ahead

The history of the automotive industry is one of dynamic and continuing progress. Since the days of the "horseless carriage" each year's new models have been marked with exciting advancements in design, engineering, production and performance.

Yet the accomplishments of the past are simply a promise of future achievement . . . because the automotive industry knows but one way to go—and that's ahead.

Borg-Warner is proud of its part in the industry's growth . . . proud of its contributions to automotive safety, performance, economy and value through creative engineering and volume production of essential parts.

"Design it better—make it better" is the guiding principle of Borg-Warner. It is at once our challenge, and our pledge to the automotive industry.

Roy D. Ingersoll

President

BORG-WARNER CORPORATION

MILESTONES ALONG THE WAY

1900—The old time mixing valve was replaced by SCHEBLER carburetors.

1903—Radiators made of copper tubing with attached cooling fins introduced by LONG.

1913—The single plate clutch was developed by BORG & BECK, and silent timing chains were introduced by MORSE CHAIN.

1916—Universal joints were developed by MECHANICS.

1921—First standard type transmissions were introduced by WARNER GEAR.

1922—Double plate clutches were introduced by LONG.

1923—Multiple spring clutches were developed by ROCKFORD.

1924—Vibration dampening flexible center clutches introduced by BORG & BECK.

1930—Transmission synchronizer units produced by WARNER GEAR.

1931—Free wheeling was introduced to the industry by WARNER GEAR.

1934—Automatic overdrives for transmissions were introduced by WARNER GEAR.

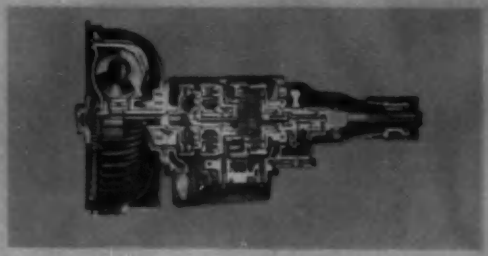
1938—Borglite and Torbend clutch plates were introduced by BORG & BECK, LONG and ROCKFORD.

1949—Simpler, finer, more efficient automatic transmissions were introduced by DETROIT GEAR and WARNER GEAR.

1952—LP-Gas carburetion systems developed by MARVEL-SCHEBLER.

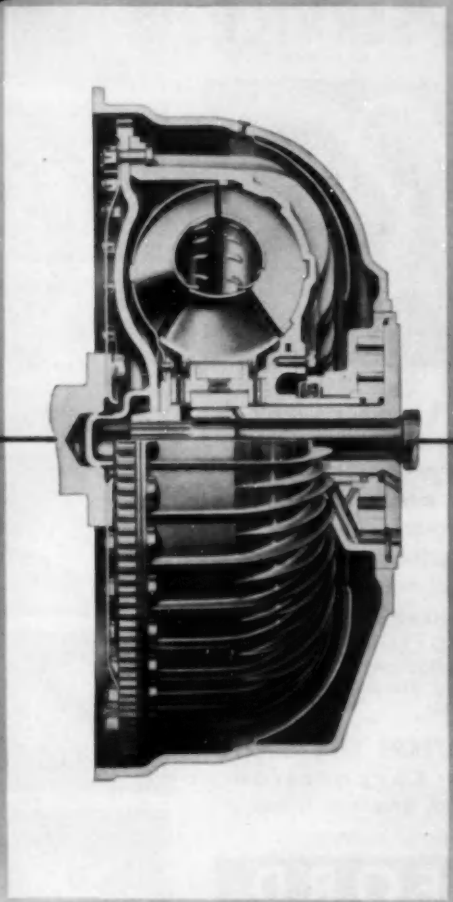
1953—Passenger car power brakes developed by MARVEL-SCHEBLER.





the new
BORG & BECK
TORQUE
CONVERTER

used in Fordomatic and Merc-O-Matic transmissions



An air-cooled Torque Converter of unique design with steel blades assembled in die-cast aluminum Impeller whose 68 fins provide swift cooling.

The Turbine is made of steel stampings and the Stator is aluminum. Its One-Way 20 sprag clutch is Borg-Warner's well-proved design.

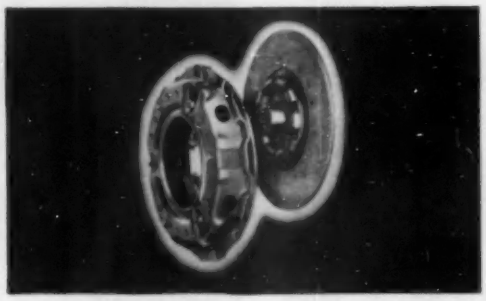
Light in weight, with a torque ratio of 2.1:1, it has excellent efficiency, yet it can be readily disassembled in the field for inspection or repair.

BORG & BECK CLUTCH · THE STANDARD ·

BORG & BECK DIVISION
BORG - WARNER CORPORATION
Chicago 38, Illinois

BW

CLUTCH KNOW-HOW AT YOUR SERVICE



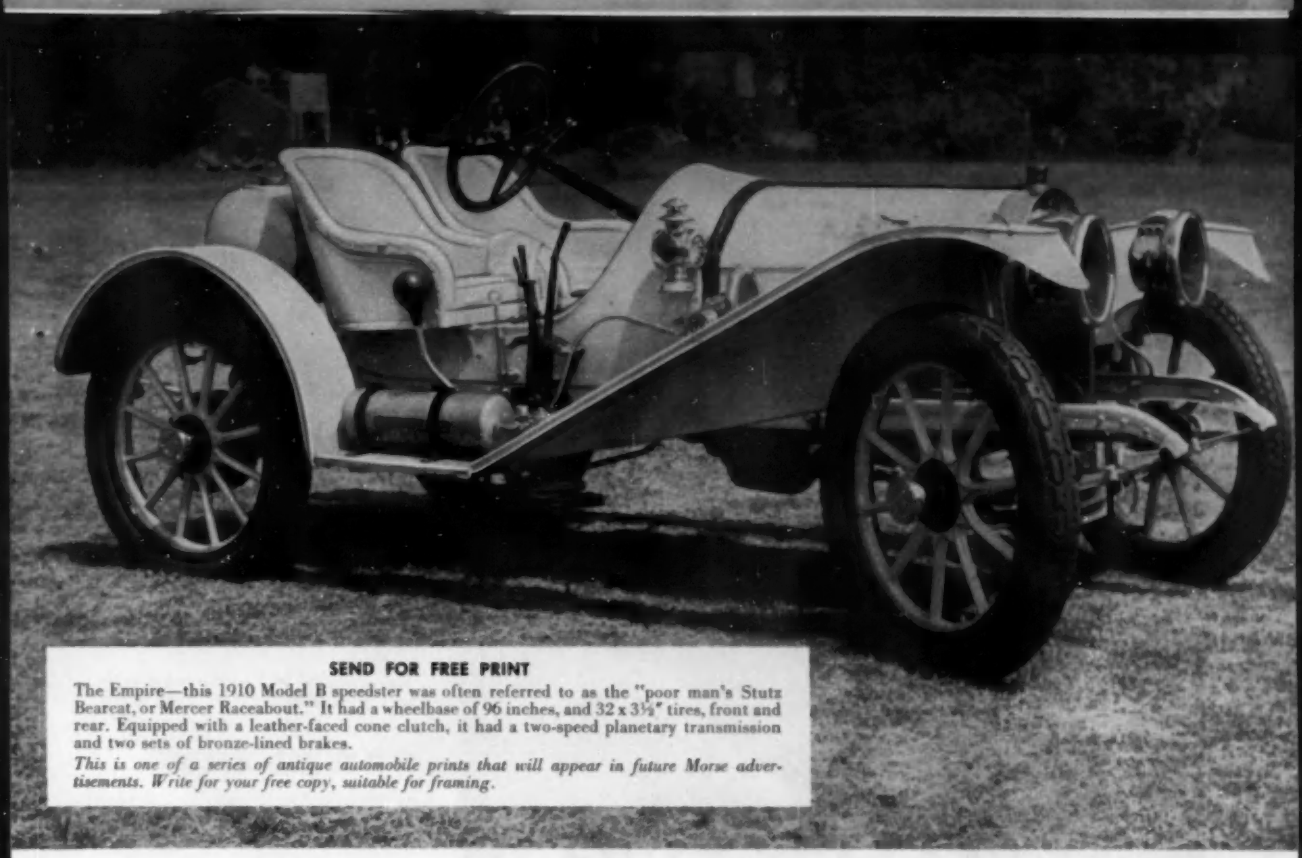
ROCKFORD CLUTCH engineers have designed clutches, power take-offs and speed reducers for hundreds of different products. This wide experience can help solve *your* power transmission control problems. Just send a description or print of your needs for their recommendations.

SEND FOR THIS HANDY BULLETIN

Shows unique ROCKFORD CLUTCH and POWER TAKE-OFF applications. Contains diagrams, dimensions, capacity tables, etc.

ROCKFORD CLUTCH DIVISION
Borg-Warner Corporation
315 Catherine Street, Rockford, Illinois

ROCKFORD CLUTCHES



SEND FOR FREE PRINT

The Empire—this 1910 Model B speedster was often referred to as the "poor man's Stutz Bearcat, or Mercer Raceabout." It had a wheelbase of 96 inches, and 32 x 3½" tires, front and rear. Equipped with a leather-faced cone clutch, it had a two-speed planetary transmission and two sets of bronze-lined brakes.

This is one of a series of antique automobile prints that will appear in future Morse advertisements. Write for your free copy, suitable for framing.

Why 13 out of 16 auto manufacturers use Morse Timing Chains as original equipment

Of the sixteen automobile manufacturers who use timing chains as original equipment, *thirteen* specify Morse Timing Chain Drives.

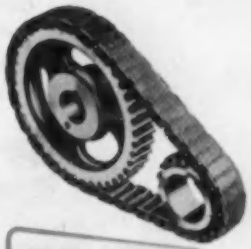
Why?

Because Morse Timing Chain Drives give accurate, positive timing, in spite of shaft end-play. Operation is safe, quiet and smooth, even when camshafts and crankshafts are not exactly parallel.

Because Morse Timing Chain Drives are precision-built . . . made to give your cars, trucks, and buses long service life and freedom from maintenance.

Morse has manufactured precision Power Transmission equipment since 1893. It is highly likely that your current power transmission problem isn't new to us. In any event, we can provide you with expert engineering advice upon request.

MORSE CHAIN COMPANY
7601 Central Avenue
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MORSE
MECHANICAL POWER TRANSMISSION PRODUCTS

FOR 24 REASONS, MASTERS OF MECHANICAL POWER TRANSMISSION SINCE 1893





PACKAGED POWER!

LONG TORQUE CONVERTERS ARE *CUSTOM-ENGINEERED* FOR EVERY JOB

NOW—for the first time—LONG Manufacturing Division of B-W offers *one complete package* tailored to fit *your* power transmission requirements.

Engineered and manufactured entirely by B-W, the LONG package includes the *right* converter for *your* power plant . . . the *right* clutches, gearboxes, pumps, heat exchangers, bell housings, universal joints and accessory equipment.

Available in a wide range of power ratings for . . .

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Cranes • Dirt pushers • Lumbering equipment • Ore and oil well devices • Road rollers • Shovels, Track-laying vehicles • Lift trucks • Self-propelled machines

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Tractors • Balers • Combines • Pickers • Loaders • Diggers • Cutters • Well-drillers • Bulldozers and countless new agricultural machines

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Auxiliary engine-room power plants • Dockside cranes • Winches • Cargo-handling equipment • Davits • Pumps • Anchor-chain capstans • All variable-load machinery

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For the very latest in design and highest quality workmanship — America's leading automobiles rely on MECHANICS. MECHANICS drive lines are engineered to meet each customer's specific needs. Torque, size, weight, balance, angularity, runout, safety, lubrication, assembly and service problems all have been overcome — to each customer's complete satisfaction. Let us help engineer joints and drive lines to fit Your products.

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BORG-WARNER "feather touch" POWER BRAKES

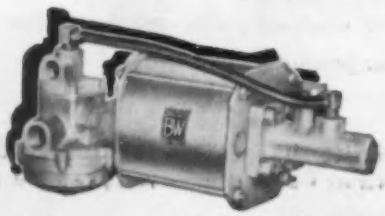


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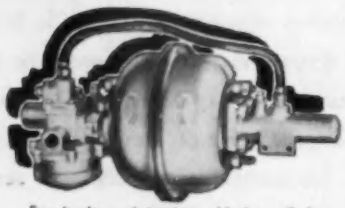
Designed and Engineered for All Popular Makes!

A COMPLETE LINE OF B-W POWER BRAKE EQUIPMENT

HYDRAULIC POWER UNITS



For passenger car and light truck applications.



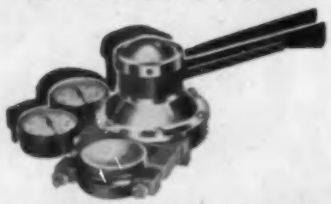
For trucks and tractors. Master cylinders sizes from 1¼" to 1¾".

POWER CHAMBERS



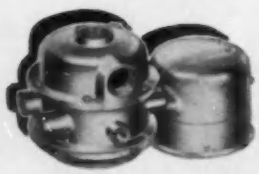
For all trailers, ranging from 300 pound pull to 950 pounds.

HAND CONTROL VALVES



For steering column and dash mounting, with or without gauges.

RELAY VALVES



Fast acting with automatic breakaway feature.

Also a complete line of conversion valves, check valves, vacuum reserve tanks and other power brake accessories.

MARVEL-SCHEBLER *Products Division*
BORG-WARNER CORPORATION • DECATUR, ILLINOIS

Write Today For
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Complete Line Catalog No. AI-3







You will be interested in this comprehensive brochure outlining our complete facilities and products now manufactured. We shall be pleased to furnish copies upon request.

These newly developed Double Cage Full Phasing Sprag Clutches are but one example of the high caliber of engineering and production excellence we strive to maintain. Our sprag clutches have shown outstanding performance in free-wheeling applications for aircraft and automatic transmissions where shock loading and torsional vibration are encountered. For detailed reports on the development of this unique clutch, write for copies of the reprints illustrated.

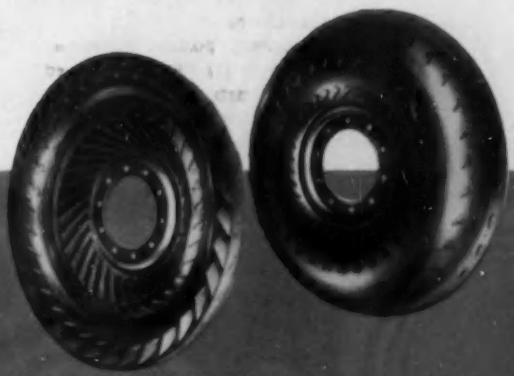


Reprint Product Engineering
December, 1954



Reprint Aviation Age
January, 1955

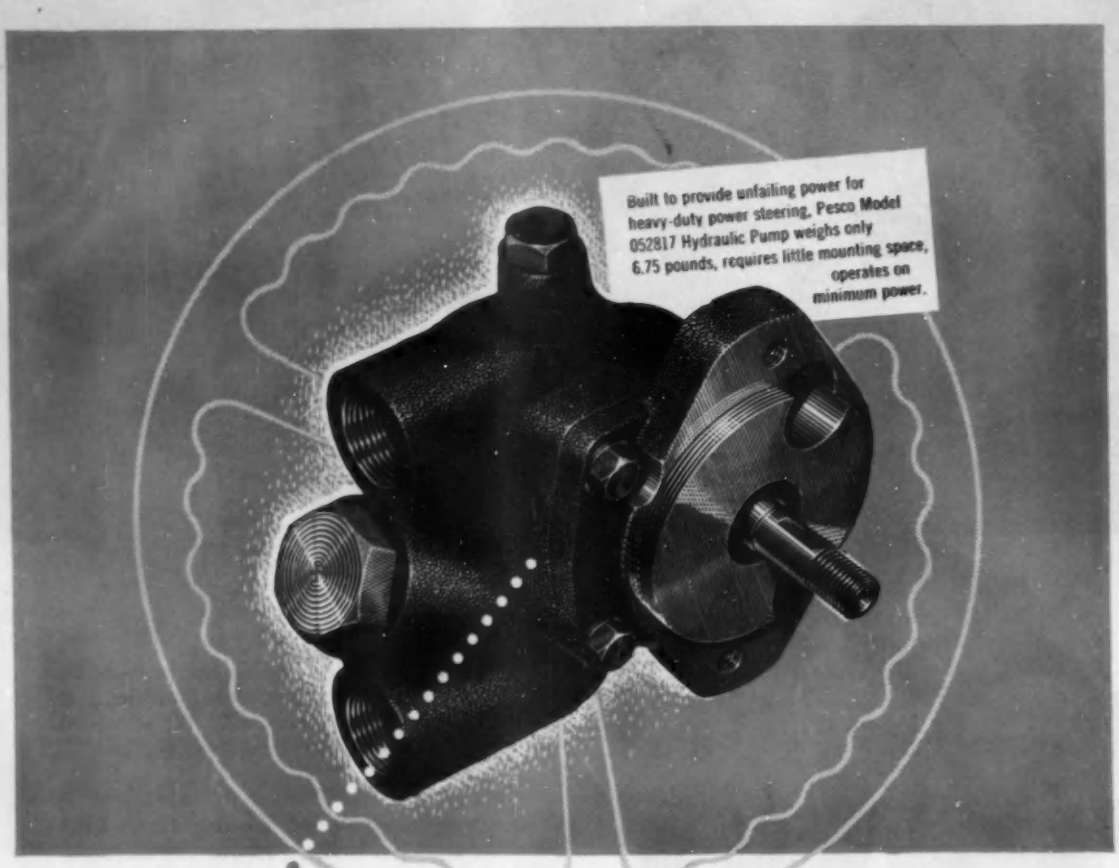
The largest independent producer of stamped and clinched sheet metal *TORQUE CONVERTER TURBINE ASSEMBLIES.*



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SPRING DIVISION

BORG-WARNER CORPORATION • BELLWOOD, ILLINOIS



Better steering starts here!

Improved power steering for all types of heavy-duty vehicles, both over-the-road and off-the-road units, starts with Pesco's Hydraulic Steering Pump. On trucks, tractors and construction equipment, this Pesco-designed pump provides unfaltering hydraulic power regardless of operating conditions.

This engine-driven, positive-displacement gear pump features: (1) "Pressure loaded" bearings which automatically adjust for wear assuring sustained new pump performance, (2) minimum power requirements, (3) minimum size and weight, (4) self-lubrication by fluid pumped and (5) a standard pressure relief setting of 750 psi. Operating at 750 psi and 750 rpm, it delivers 3.0 gallons per minute.

Pesco creative engineering produced this pump—and it can produce a pump designed for your exact needs. The experience and "know-how" of Pesco engineers may produce a better and more profitable answer to your hydraulic power problem. This engineering service is available to you . . . and we think you will like the results you get.

Pesco engineers will be glad to supply complete technical information. Operating models are available for testing on your equipment. Call or write: PESCO, 24700 North Miles Road, Bedford, Ohio.

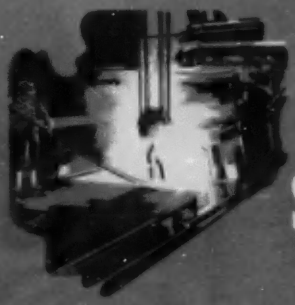
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- Shovel steels
- Soft center steel
- Stainless steels
- Tem-Cross steel
- Thingo steels

ENGINEERING B-W PRODUCTION

INGERSOLL STEEL DIVISION
BORG-WARNER CORPORATION
New Castle • Indiana

Specialists in Special Purpose Steels

21 of the 30 Divisions of Borg-Warner Serve the Automotive Industry



BORG & BECK—clutches and torque converters for passenger cars, trucks and tractors.

BORG-WARNER INTERNATIONAL—export sales of automotive parts.

BORG-WARNER SERVICE PARTS—U. S. distribution of automotive service parts.

CALUMET STEEL—special automobile jack bar steel; small angles for auto seats.

DETROIT GEAR—automatic transmissions for passenger cars and trucks; truck, tractor and bus transmissions; gears and precision parts for passenger cars, trucks, tractors and aircraft.

FRANKLIN STEEL—special automobile jack bar steel; spring steel bumper supports; small angles for auto seats.

INGERSOLL PRODUCTS—tapered steel discs for truck wheels; automotive stampings; bumper and stabilizer bars.

INGERSOLL STEEL—automotive and tractor clutch discs; carbon electric steel for tank clutch plates; high carbon and alloy steel sheets; stainless and stainless-clad sheets and armor plate.

LONG MANUFACTURING—clutches and radiators for passenger cars, trucks, buses and tractors; torque converters; oil coolers for the automotive industry.

LONG MANUFACTURING CO., LTD. (Canada)—Clutches and radiators for passenger cars, trucks, buses and tractors; oil coolers for the automotive industry.

MARBON—adhesives for bonding rubber and synthetic rubber to metal and other materials (trade name Ty-Ply).

MARVEL-SCHEBLER PRODUCTS—carburetors for military and industrial equipment and farm tractors; LPG carburetion systems; power brakes for passenger cars and trucks.

MECHANICS UNIVERSAL JOINT—universal joints and propeller shafts for passenger cars, trucks, buses, aircraft, farm machinery, tractors, road machinery and mining machinery.

MORSE CHAIN—automotive timing chains and sprockets.

MORSE CHAIN CO., LTD. (England)—Automotive timing chains and sprockets.

PESCO PRODUCTS—electric driven and engine driven hydraulic pumps; valves and electric motors for agricultural and industrial use.

ROCKFORD CLUTCH—spring-loaded and over-center clutches for automobiles, trucks, tractors, road-building, earth-moving and oil field machinery, industrial machinery, agricultural implements, machine tools (Fullmore). Power take-off and gear reduction units for gasoline and diesel engines.

SPRING DIVISION—torque converter parts and sub-assemblies; sprag type free wheeling clutches; special clutch plates and parts for automatic transmissions; precision flat and Belleville type springs; automobile clutch and valve springs; multislide and punch press stampings, plate and heat treated; special commercial heat treating; small electric motor commutators.

WARNER AUTOMOTIVE PARTS—for replacement purposes—ring gears and pinions; differential cases; differential internal gears and spiders; axle shafts; dust cap parts; transmission gears for passenger cars, trucks and tractors; power take-offs.

WARNER GEAR—automatic transmissions for passenger cars; standard transmissions for cars, trucks, tankettes, buses and tractors; overdrive units for passenger cars; transfer transmissions for trucks; synchronizer units for passenger cars and trucks; parking brake assemblies.

WARNER GEAR CO., LTD. (Canada)—synchronizer units for passenger cars and trucks.

ENGINEERING B-W PRODUCTION

Borg-Warner corporation

310 SOUTH MICHIGAN AVENUE • CHICAGO 4, ILLINOIS

VEHICLE AND PETROLEUM ENGINEERS

Discuss Current Problems

By Joseph Geschelin

An enthusiastic audience of some 275 people, representing motor vehicle manufacturers and the oil industry, met in Detroit Feb. 17 on the occasion of the sixth annual meeting of the lubrication committee of the American Petroleum Institute. One of the most interesting and instructive technical meetings within the experience of this writer, it was brightened by frank discussion of problems, open disclosure of controversial subjects, and a free debate of these matters by selected teams representing both sides. The net result was a fresh exposition of the lubrication and fuel picture that should be of practical value to engineers, service people, the petroleum industry and its service outlets.

More Powerful Engines

Before we delve into the meat of the debate, we wish to summarize some timely and newsworthy comments made by V. G. Raviolo, Ford Motor Co., in appraising what's ahead in engines and other details. For one thing, Raviolo disregards the usual kind of forecasting, based upon past experience, because developments in recent years have appeared in big leaps rather than small doses. He believes that engine horsepower will continue to rise, with increases up to 30 per cent in the output of low-priced cars during the next few years. With this will come increases in displacement, in efficiency, and in compression ratio.

Raviolo sees 10 to 1 compression ratio by 1957, and is sure it will reach for 12 to 1, although engine designers do not yet know what is needed to get up to this value, and no one knows yet whether 100-plus octane fuels will be available in quantity to meet this development.

Although many engines are operating on regular grade fuels today, premium fuels are entering the low-priced and mid-priced range cars with the availability of power packages.

Within the next five years he visualizes a narrowing of the range of compression ratios for the gamut of engines, implying a larger consumption of 100-octane fuels. In this connection, it is estimated that by 1960 the U.S.A. will be consuming gasoline at the rate of 52-billion gallons a year.

Engine Improvements

From a design standpoint this advance will be accompanied by improved combustion chambers, more mechanical octanes built into the engine, means for reducing deposits, higher bearing loads, and higher stresses. Some of the latter features will mean more problems for the petroleum industry. Incidentally, he expects cooling problems to grow in severity, foresees development of a sealed cooling system, using some synthetic coolant of high stability and high specific heat capacity.

Despite the increased burden on engine lubes, he feels that the trend will be to extremely stable lubricants, capable of giving satisfactory operation with oil change periods of 6000 miles.

Raviolo is much more optimistic about the gas turbine than many. His feeling is that gas turbines will appear to be far, far down the road, then suddenly break out full fledged. In fact, he sees the gas turbine in production cars by 1965, expanding through the industry once it has taken hold. It may be operating on gasoline. Lubrication will pose some new problems. Lubes must be capable of operating at temperatures of 500 F, with some surfaces baked to 750 F. Perhaps the biggest problem will be that of lubricating the high speed reduction gearing.

Hydraulic Units Increase

Since the use of hydraulic units is on the increase; with power steering, automatic transmissions, power brakes, and other devices, Raviolo feels that a central hydraulic system of practical form may become essential in the near future. This statement reminds us of the paper presented some time ago on a central hydraulic system proposed by Borg-Warner. Incidentally, he noted that if and when many of these hydraulic features become standard equipment on most cars, there will be a demand for special hydraulic oil properties, particularly anti-foaming characteristics.

New Mechanical Features

The main session opened with an intriguing summary by E. M. Johnson and C. W. Mortensen, The Texas Co., of the recent trends in vehicle design and their effects upon fuels and lubricants. He noted particularly the new mechanical features such as automatic transmissions, hydraulic valve lifters, power steering, high compression valve-in-head engines, and the like, concluded that the cooperative teamwork of vehicle producers and the petroleum industry has gone far to keep pace with design progress.

The real fire works resulted from a presentation of the vehicle manufacturers' view of current fuels and

(*Turn to page* 418, *please*)

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GREY IRON CASTINGS

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ONE OF THE NATION'S
LARGEST AND MOST MODERN
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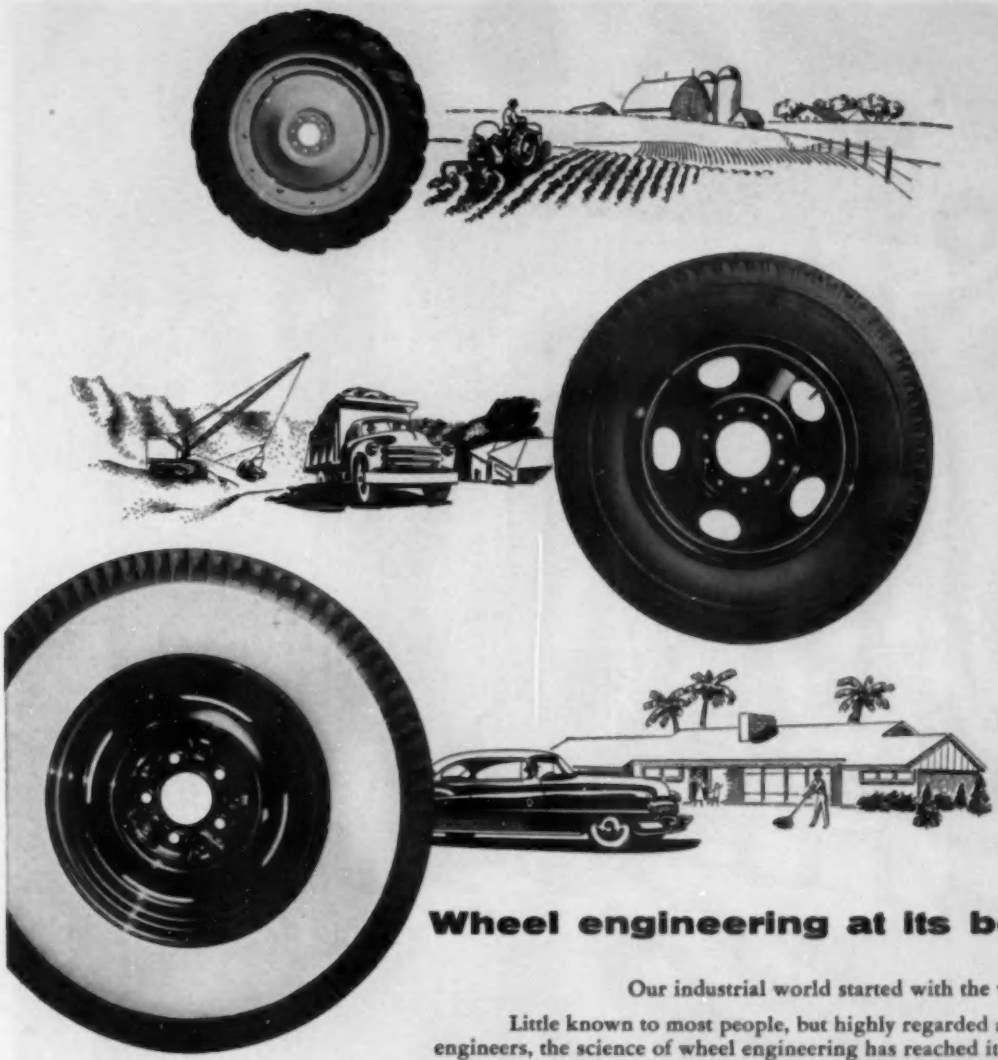
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Wheel engineering at its best

Our industrial world started with the wheel.

Little known to most people, but highly regarded among engineers, the science of wheel engineering has reached its most advanced stage of development at Kelsey-Hayes. Here, with a background of experience that goes back to the birth of the automobile, specialists in wheel engineering design, test and build wheels, hubs and drums for almost every kind of vehicle.

Because this pioneering development work goes on all the time most leading manufacturers of modern passenger and commercial vehicles look to Kelsey-Hayes for leadership in wheels.
Kelsey-Hayes Wheel Company, Detroit 32, Michigan.

KELSEY HAYES

World's Largest Producer of Automotive Wheels

Wheels, Brakes, Brake Drums, Special Parts for all Industry • 9 Plants—Detroit and Jackson, Mich. . . . McKeesport, Pa. . . . Los Angeles . . . Windsor, Ont., Canada . . . Davenport, Ia. (French & Hecht Farm Implement and Wheel Div.)

Mayari R makes it lighter... stronger... longer lasting



In this spacious trailer manufactured by Trailmobile, Inc., Berkeley, Calif., fir flooring is screwed to Mayari R floor supports. Rear door frame was jig-welded from Mayari R members. Note lightness of Mayari R vertical panel supports.

Trailmobile Cuts Deadweight 32 pct with Mayari R

In building this 24-ft semi-van trailer, the Trailmobile people utilized the weight-saving qualities of Mayari R. Taking advantage of its yield point of 50,000 psi, they used Mayari R for such members as roof bows, floor bolsters, rear suspension framing, superstructure and landing gear frame brackets. Result: a *stronger* trailer with 32 pct less deadweight.

What Trailmobile is doing with Mayari R may well be feasible in your plant too. Besides its superior mechanical properties, you can take advantage of its excellent resistance to atmospheric corrosion, impact, batter, vibration. And you'll find that it welds and forms as readily as plain carbon steel, without special equipment.

Our new Catalog 353 contains plenty of helpful technical data, along with dozens of illustrations that point up the versatility of Mayari R. To get a copy promptly, just call or write the Bethlehem office nearest you.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

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HYDRAULICS FOR MOBILE EQUIPMENT

VOL. 2

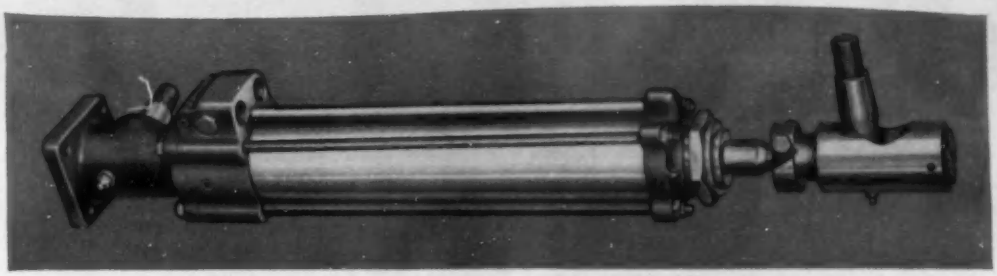
Mobile Equipment News

VICKERS INCORPORATED, DETROIT, MICHIGAN

IMPROVES PERFORMANCE • CUTS COSTS

NO. 3

New! VICKERS® HYDRAULIC POWER STEERING BOOSTER...SERIES S23



LATEST DEVELOPMENT in POWER STEERING for TRUCKS, BUSES, MATERIALS HANDLING VEHICLES, ROAD CONSTRUCTION and MINING MACHINERY

More compact . . . improved in operating characteristics . . . this new Vickers Steering Booster, Series S23 is an important new development in power steering for many vehicles. Application is much easier because it requires less space . . . and ultimate costs are substantially lower. Series S23 thus opens the way to fingertip ease of steering for a wide range of additional vehicles.

Like the preceding models, Series S23 has hydraulic lock against road shock. Bumps, chuckholes, blown front tires, obstructions, etc., cannot spin the steering wheel or jerk it out of control. This is a safety factor of great importance.

Series S23 Boosters are provided either with (Model S23R) or without (Model S23N) an integral relief valve. Model S23N is used with Vickers VT16 and VT17 pumps that have integral volume control and relief valve. When the larger volume Series V200 pump is used and a volume control is required in the circuit, the S23N is used with a separate combination valve (see Series FM2 below). Model S23R is used with the Series V200 pumps that have no integral valving, for applications where a volume control is not required.

MORE VERSATILE INSTALLATION

In Series S23 Boosters, the servo ball stud housing is symmetrical, and can be assembled in any one of four positions. This and the compactness of the Booster makes application easier . . . increases the number of applications which can be made without major engineering changes. Series S23 Boosters can be mounted interchangeably with Models S6-277 and S6-279 Boosters.

REQUIRES LESS SPACE

The new booster has been reduced in size by the redesign of the servo control valve. The tube connecting the servo valve to the rod end has been relocated and is now on the same side as the fitting connection. As a result of these changes, Series S23 requires less space . . . works in closer quarters.

ASK FOR NEW BULLETIN M5106

7062

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DIVISION OF THE SPERRY CORPORATION

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VICKERS® VOLUME CONTROL and OVERLOAD RELIEF VALVE



Five sizes of Series FM2 Valves were developed primarily for hydraulic power steering on trucks, buses and materials handling equipment where the pump does not include a volume control valve. The FM2 improves steering booster performance by providing a relatively constant volume of oil regardless of engine speed variations. An integral relief valve is included.

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

"Wagner Rotary Air Compressors

...have operated up to 550,000 miles without even needing seals to be changed"*



TROJAN FREIGHT LINES, INC.
1235 DALLER ST. DAYTON 3, OHIO

Wagner Electric Corporation
6400 Plymouth Avenue
Saint Louis 14, Missouri

Dear Sirs:

Our drivers log a lot of miles hauling throughout Ohio and Indiana. To provide maximum safety and to give customers 'on schedule' service, I make absolutely sure that the power equipment in our fleet is kept in perfect running condition.

The Wagner 'Air-Over-Hydraulic' Brake Systems installed in our fleet have given us very fine service. I especially like Wagner Rotary Air Compressors. They are easy to install and service, quiet in operation and definitely keep air lines free of carbon and sludge formation. They have a long service life—in fact some of the Wagner Rotary Air Compressors have operated up to 550,000 miles without even needing seals to be changed. I also think your compressors have the fastest air pressure recovery and are extremely economical to service and maintain. They reduce road failure, too, because they are dependable.

We plan to specify Wagner Air the next time we order new power units for our fleet.

Very truly yours,
Pete Haney
Service Manager

Pfkm

says: PETE HANEY, *Service Manager
Trojan Freight Lines, Inc., Dayton, Ohio

Profit-minded trucking companies, like Trojan Freight Lines, Inc., have been quick to realize the absolute dependability of WAGNER AIR BRAKES. This year, many other trucking firms will gain the same freedom from maintenance worries, will cut costly repair jobs and increase driver-equipment-cargo safety by standardizing on WAGNER AIR.

WAGNER ROTARY AIR COMPRESSORS—standard on all WAGNER AIR BRAKE SYSTEMS—have these outstanding features: *Rotary motion*—to keep friction loss low and operating efficiency high . . . *Oil separation and cooling before air is discharged from the compressor*—to reduce the air temperature and prevent carbon formation in air lines. And because of the proven record of long parts-life, costly down time due to failures or repairs is kept at a minimum. WAGNER AIR BRAKES will save money for any fleet operation, regardless of size.

Because of the ever-increasing demand for greater road and cargo safety and maintenance economy, it will pay you to include Wagner Air Brakes as standard equipment on the vehicles you manufacture.

Send for your free copy of Wagner Bulletin KU-201 for full information and complete details. It will be sent to you without cost or obligation. Mail your request, today.





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KU-201

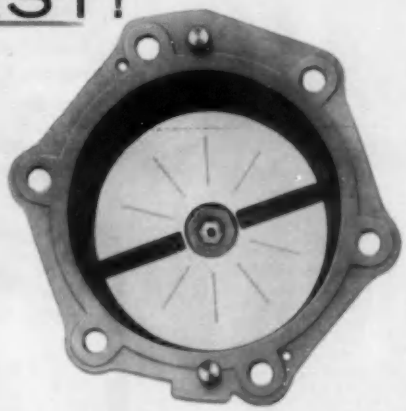
LOCKHEED HYDRAULIC BRAKE PARTS and FLUID . . . NoRol . . . CoRoX BRAKE LINING . . . AIR BRAKES . . . TACHOGRAPHS . . . ELECTRIC MOTORS . . . TRANSFORMERS . . . INDUSTRIAL BRAKES



Better Vision through Better Vacuum is Another AC FIRST!

The AC ROTARY VACUUM PUMP, mounted in the crankcase at the base of the oil pump, gives a boost to engine vacuum, smooths out windshield wiper action during acceleration, pumps up to 28 inches of mercury to insure plenty of power for king-size windshields — and, incidentally, improves crankcase ventilation.

Ingeniously designed, with spring-loaded vanes working off an eccentric, this AC Pump is self-lubricating, trouble-free, quiet and positive. It is typical of AC capacity to meet automotive problems. Any AC office will give your inquiry prompt and capable attention.



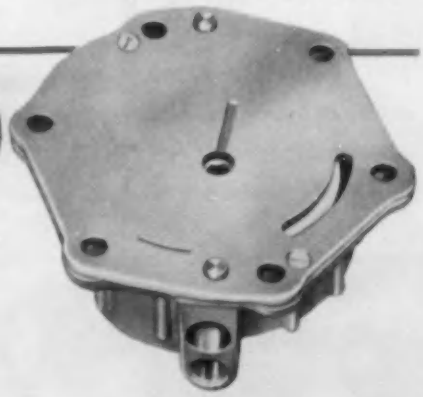
The AC Rotary Vacuum Pump, shown open (above) and with cover plate applied ready for assembly, is original equipment on all 1955 Cadillac cars.

AC QUALITY PRODUCTS

For more than 20 years nearly every make of car has used one or more AC products

ADAPTERS (Drive) • **AIR CLEANERS** • **AIR CLEANERS AND SILENCERS** (Combination) • **AMMETERS** • **BREATHERS** (Crankcase) • **CAPS** (Radiator Pressure) • **FLEXIBLE SHAFT ASSEMBLIES** • **FUEL PUMPS** • **FUEL AND VACUUM BOOSTER PUMPS** (Combination) • **FUEL FILTERS & STRAINERS** • **GASOLINE STRAINERS** • **GAUGES—AIR** (Pressure) • **GAUGES—GASOLINE** • **GAUGES—OIL** (Pressure) • **GAUGES—TEMPERATURE** (Water, Oil) • **OIL FILTERS** (Lube) • **PANELS** (Instrument) • **RECIPROCATING VACUUM PUMPS** • **ROTARY VACUUM PUMPS** • **SPARK PLUGS** • **SPEEDOMETERS** • **TACHOMETERS** • **TERMINALS** (Ignition Wire) • **VALVES** (Crankcase Ventilation)

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AC SPARK PLUG DIVISION GM GENERAL MOTORS GENERAL MOTORS CORPORATION

La Salle is a major supplier of

QUALITY **COLD FINISHED STEEL BARS...**

to the Automotive Industry



- ROUNDS, FLATS, SQUARES, HEXAGONS, SPECIAL SHAPES
- COLD DRAWN—TURNED AND POLISHED —GROUND AND POLISHED
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- FREE-MACHINING STEELS
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- FURNACE-TREATED STEELS
- STRESSPROOF
- LA-LED
- SUPER LA-LED

La Salle STEEL CO. • 1438 150th Street
HAMMOND, INDIANA

A New Concept in POWER TRANSMISSION

Dualoc NON-EQUALIZING Differentials

for Cars, Trucks and Farm Equipment



The illustration demonstrates the power division of a Dualoc Non-equalizing Differential. Car is pulling through approximately 15 inches of snow on right side while negotiating about a 7% grade. Driving traction is secured by the automatic shift of more power to the left wheel operating on the cleared pavement.

- **Automatically transfers greater power to wheel with best traction**
- **Has power division ratio up to 14 to 1**
- **Both drive wheels connected at all times**
- **Instantaneous control of torque that helps prevent skidding**
- **Cushioned load that prevents damaging or breaking of axle**



Shown above is an assembled unit of the Dualoc Non-equalizing Differential complete with ring gear.

Dualoc Non-equalizing Differentials distributes torque between the wheels giving the wheel with the greater traction the greater amount of power. Under adverse driving conditions the Dualoc Non-equalizing Differential controls the flow of torque to such a marked degree that slippage due to uneven road surfaces, sand, gravel and icy spots or when one wheel spins in mud or deep snow—is minimized to the point where stalls are practically eliminated.

The action of the Dualoc Non-equalizing Differential is fully automatic in operation. It is locked on a straight drive so there are no moving parts, thus minimizing wear and assuring long life.

DUALOC
A New Concept in Power Transmission
DRIVE

For detailed information wire or write

DUALOC DRIVE, INC. 700 Twentieth St., Rockford, Illinois

Manufacturers of Non-equalizing Differentials for Cars, Trucks and Tractors

Automotive Coil
and Leaf Springs

FOR MOTOR CARS



TRUCKS . . . BUSES



TRACTORS . . . TRAILERS



OFF HIGHWAY . . .



BURTON SPRINGS

. . . Vital Support to the Automotive Industry



All over the world, BURTON SPRINGS play a truly fundamental part in protecting both vehicles and their loads against the most extreme operating hazards . . . adding to the safety, comfort and dependability of motor transportation.

Trucks, buses, trailers, tractors, off highway equipment, and private motor cars of almost every prominent make use Burton Leaf or Coil springs as original equipment. Hundreds of difficult and unusual spring problems have yielded to the close cooperation of Burton engineers working side by side with the technical staffs of the World's foremost vehicle builders.

We invite you to contact us for a review of your spring requirements.

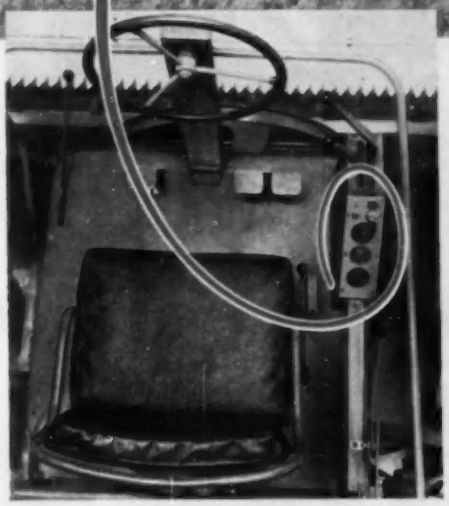
BURTON

AUTO SPRING CORP.
Western Avenue at
Forty-eighth Street, Chicago 32

PROTECT TRACTOR, FARM EQUIPMENT AND INDUSTRIAL ENGINES WITH *KS ELECTRIC Telegages*



JOHN DEERE "55" SELF-PROPELLED COMBINE EQUIPPED WITH K-S TELEGAGES



King-Seeley Electric Telegages, so widely used in automobiles and trucks, are just as effective in reporting oil pressure and water temperature for tractors, combines, motorized farm equipment and internal combustion engines wherever they may be.

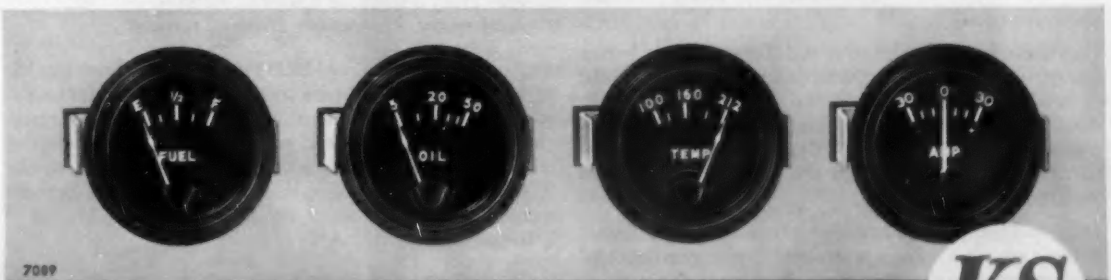
Telegages may be located to suit your convenience — even at a distance from the engine because only a single wire is needed for each instrument. There is no tubing to connect — none to vibrate and break or leak.

These instruments are available for enclosed projected installations with provision for lighting or for sealed, weatherized applications.

Telegages operate on either 6 or 12 volt circuits and are not affected by heat or cold.

Write For Full Installation Data

K-S INSTRUMENTS FOR THE PROTECTION OF INTERNAL COMBUSTION ENGINES



KING-SEELEY CORPORATION

ANN ARBOR, MICHIGAN

KS



A BRAKE . . . IS A BRAKE

. . . IS A BRAKE

. . . IS A BRAKE



OR IS IT?

More auto accidents are caused by defective brakes than by any other mechanical failure!

Brakes can grab, slip, fade, cause skids, cause swerving, act erratically, have 'morning sickness', fail in wet weather, not have enough stopping power, require too much pedal pressure, be too sensitive to pedal pressure, throw people around inside the car, not work well in reverse, get out of adjustment frequently.

But there is one brake that is different. It's a better brake—better brakes can save lives. It is the Auto Specialties Double-Disc Brake. It is one brake that doesn't get out of adjustment. Reason: there is a patented, automatic, self-adjusting mechanism on each brake. These brakes are ready now for cars and trucks.

Double-Disc Brakes bring you four big advantages: 1. they are *always* in adjustment; 2. give predictable, proportional brake response; 3. reduce expense as they rarely need relining or adjusting; 4. give the driver a feeling of confidence because he *knows* how they will perform under any condition.

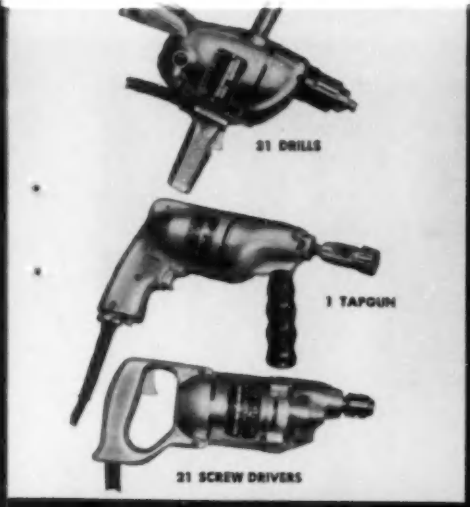
Self-adjusting Auto Specialties Double-Disc Brakes have other advantages, too: they stop cars in shorter distances at any speed. They have "built-in" self-energized power braking that is not dependent on the efficiency of boosters, tanks, tubing, diaphragms, etc. They don't lose braking effectiveness because of road spray, immersion, freezing or dust.

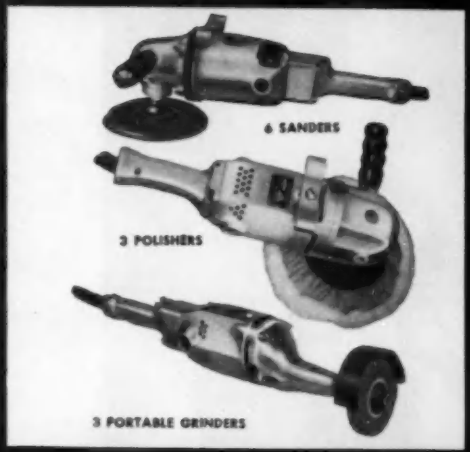
Auto Specialties Self-Energized Double-Disc Brakes have passed the severe testing of major car factories. Their cost is comparable to that of present automotive brakes. Their adoption will be in keeping with increased horsepower and speed and with the industry's continuing desire to give the American motorist better, safer and more pleasant means of transportation.

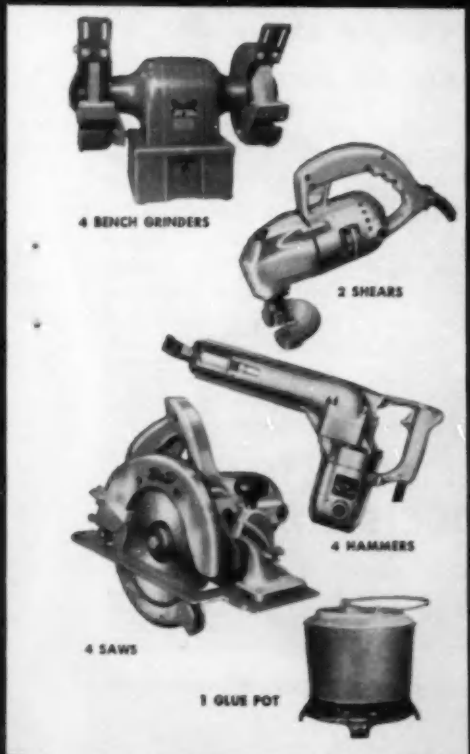
For information about these brakes, write for a copy of "THE STOPPING STORY".

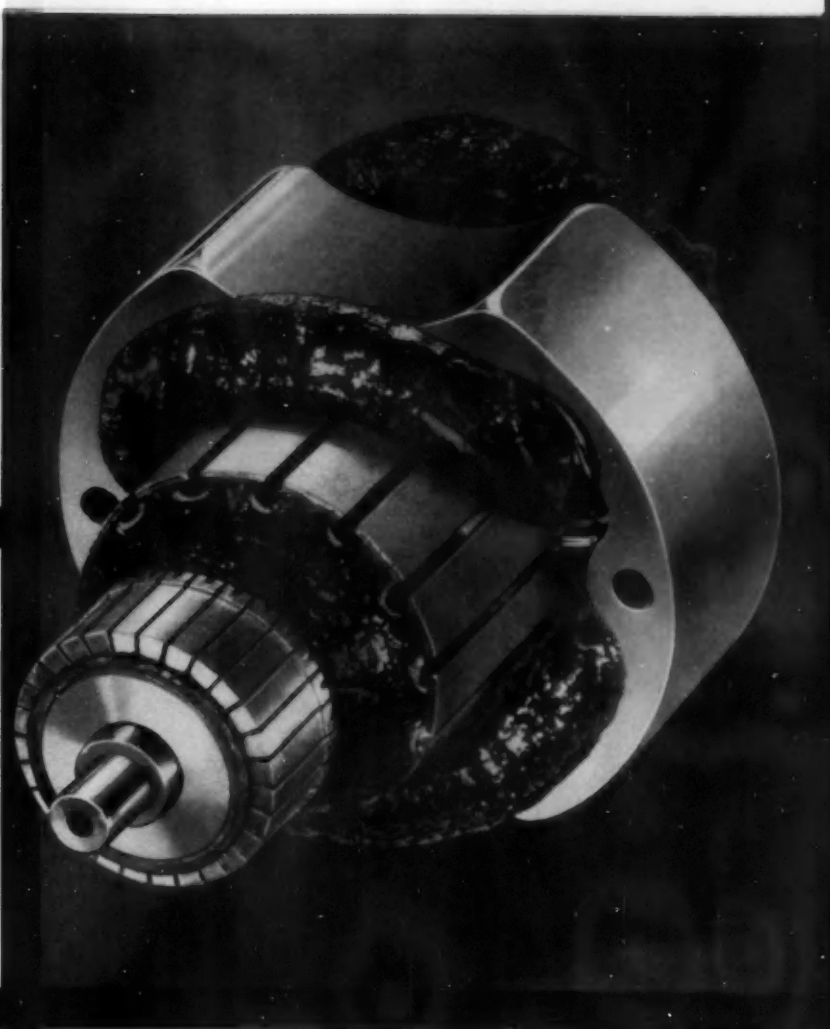
AUTO SPECIALTIES MFG. CO., INC.

SAINT JOSEPH, MICHIGAN









When we say Black & Decker Tools have *GUTS* —here's why:

It's the *power plant*—heart of every Black & Decker Portable Electric Tool! Every B&D motor is designed and built specifically *for each tool and the job it does!* When we say these tools have *guts*, we're talking about B&D-built motors that can take it, that stand up whether your job is drilling, grinding, sanding, sawing, hammering, driving screws or shearing metal.

Here are the compact, lightweight, tough Universal-type motors built specifically to supply ample torque at most efficient spindle speeds . . . to deliver the kind of results you have a right to expect from every tool in the Black & Decker line. And, B&D offers you a complete range of over a hundred tools for industry's every production, construction and maintenance operation. For a demonstration, see your B&D distributor, or write: THE BLACK & DECKER MFG. CO., Dept. 1603, Towson 4, Md.



For nearest distributor, see "Tools-Electric"

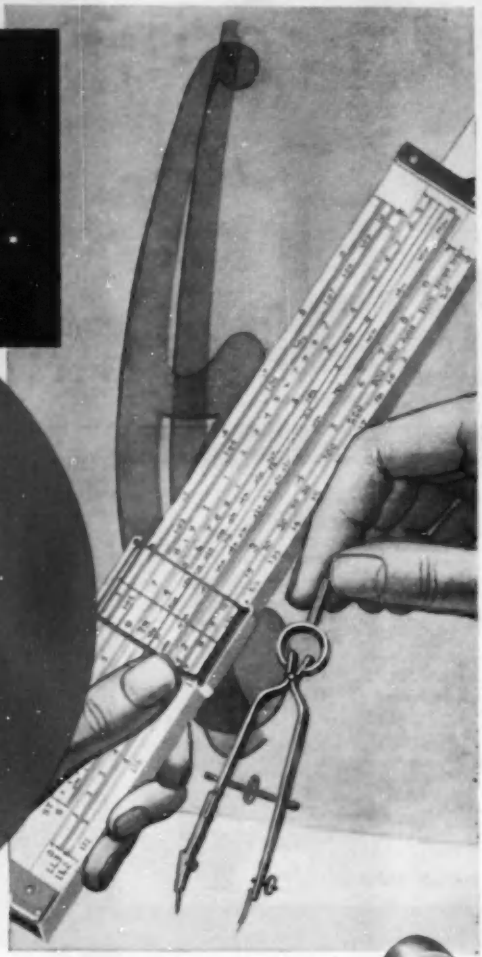
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Black & Decker®

PORTABLE ELECTRIC TOOLS

Engineer
THE DESIGN WITH . . .

DSP
Leaf SPRINGS



FIFTY YEARS' experience in meeting the strictest specifications in the design and manufacture of leaf springs enables the Automotive Division of Detroit Steel Products Company to furnish springs which will perform exactly as required on the job for which they were designed.

That's why *the makers of most of America's trucks use DSP Leaf Springs as original equipment.*



SINCE 1904 — ORIGINAL EQUIPMENT ON CARS, TRUCKS, CABS, BUSES, TRAILERS

Automotive Division

DETROIT STEEL PRODUCTS COMPANY

Also Makers of *Fenestra* Building Products

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BEST buys ROADRANGER®

Reports higher speeds on hills, less driver fatigue, better trip time

"You'll save time shipping the BEST way" is the well-known slogan of BEST MOTOR LINES.

To make sure they live up to their slogan, BEST owners are investing in modern tractors *with modern transmissions:* Fuller Semi-Automatic ROADRANGERS.

For 40 International R-195 tractors they purchased early in 1954, BEST specified Fuller R-45 ROADRANGERS . . . with 8 speeds forward in 38% steps, controlled by a single lever with a finger-tip range shift button.

BEST drivers report "the easiest, fastest shifting we've ever seen. We're hitting the first 4 speeds every 3 seconds, and we don't even have to watch the tachometer. We're first away at the green light . . . and in the Ozark foothills, we're going up and over faster than we ever thought possible."

When *you* specify Fuller Semi-Automatic ROADRANGERS for your trucks, here are the advantages you can *count* on: • No gear-splitting—8 or 10 selective gear ratios, evenly and progressively spaced. • One shift-lever—complete control of ratio selection. • Higher average road speeds—engines operate in peak hp range with greater fuel economy. • Less driver fatigue—1/3 less shifts. • Range shifts pre-selected—automatic and synchronized. • More cargo on payload axles.

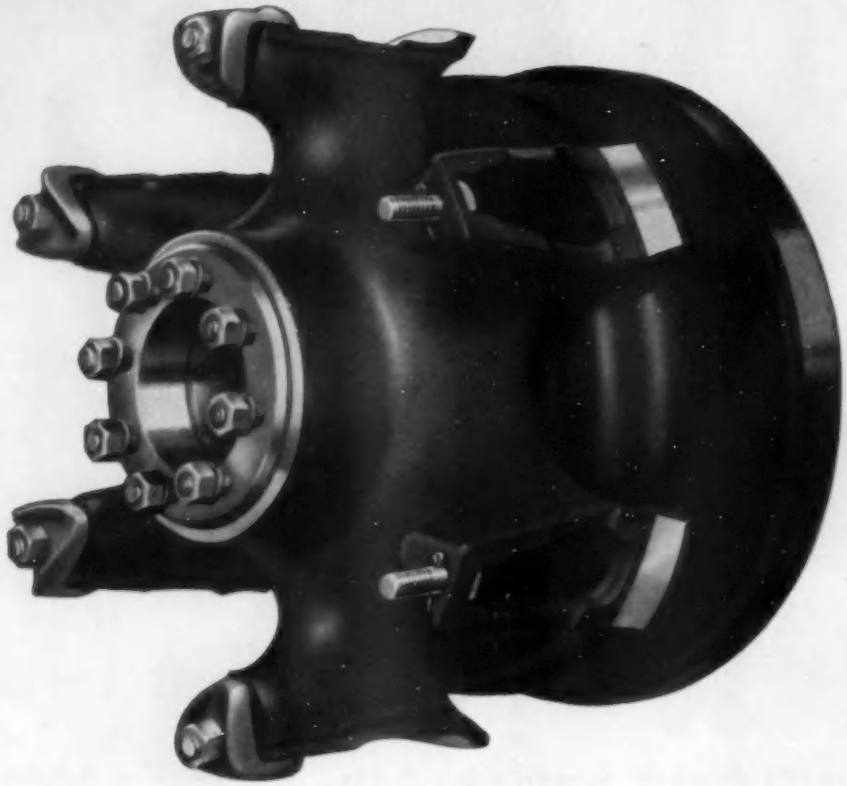
For complete information on the Fuller Semi-Automatic ROADRANGER Transmission, *see your truck dealer.* Or write to Fuller today.

Fuller TRANSMISSIONS

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.

GUNITE CAST WHEELS



for highway trucks and trailers

Assure yourself of minimum wheel and tire assembly time by using GUNITE Wheel Assemblies. Tire mounting requires no special tools . . . is quick, easy and simple. Six floating lug bolts firmly lock dual tires on the wheel. The stronger, lighter tubular-spoke of GUNITE design brings you a more efficient wheel with the proven strength of cast electric-steel. Write for complete information on GUNITE Wheels.

FERROUS CASTINGS FOR THE AUTOMOTIVE INDUSTRY

AUTOMOTIVE CASTINGS MADE TO YOUR SPECIFICATIONS.

GUNITE operates three ferrous foundries under one roof:

1. Gunite (Processed Gray Iron).
2. Malleable Iron.
3. Electric Steel.

Thus GUNITE can provide the best cast ferrous material to suit your requirements.

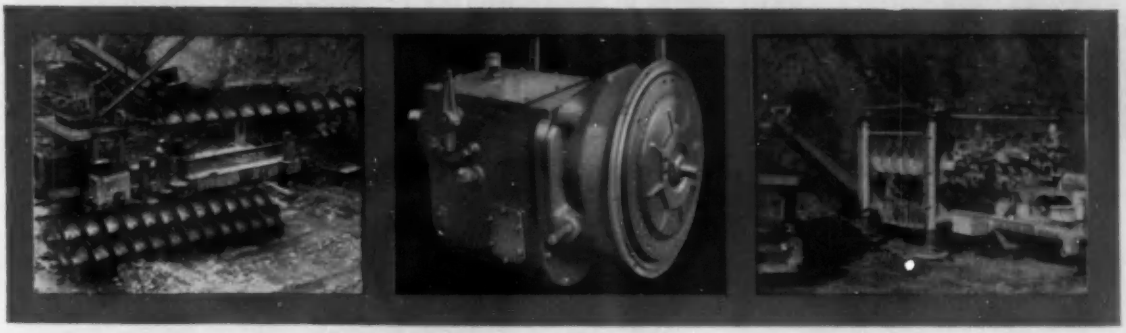
GUNITE FOUNDRIES CORPORATION

ESTABLISHED IN 1854 • ROCKFORD, ILLINOIS

An Assurance of Dependable Service

COTTA
HEAVY-DUTY TRANSMISSIONS

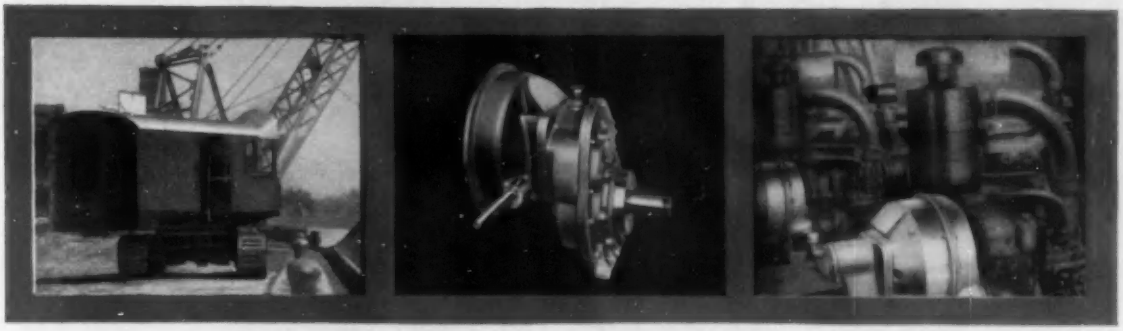
For jobs that ordinary gear-boxes can't handle — heavy-duty loads, continuous day-and-night operation, requiring multi-speeds forward and reverse — come to COTTA for "Engineered-To-Order" Transmissions, custom-designed to fit available space.



An Assurance of Dependable Service

COTTA
HEAVY-DUTY REDUCTION UNITS

Take this low-cost way to adapt higher speeds of new engines to lower rpm required for machine operation. Cotta Reduction Units are available in a broad range of ratios . . . input torque of 150 to 2000 foot pounds — for use on cranes, shovels, pumps, etc.



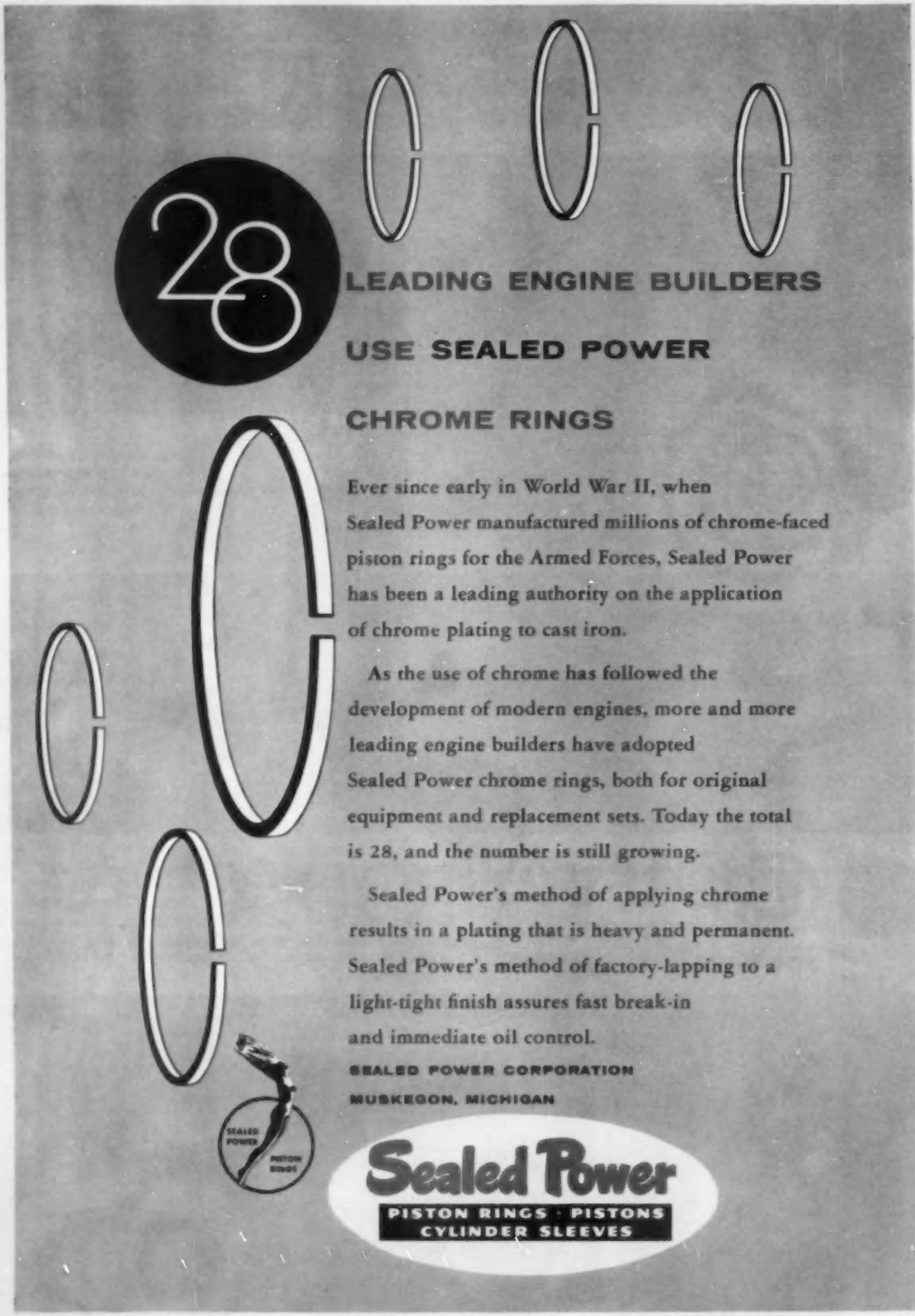
An Assurance of Dependable Service

COTTA
TRANSMISSIONS FOR TORQUE CONVERTERS

Get easier control of power through a wide range of torque and speed conditions on mobile equipment with "Engineered-To-Order" Cotta Transmissions. These specially designed, compact transmissions provide increased efficiency on trucks, railcars, winches, drilling rigs, hoists, and other heavy-duty units.



LET US HELP YOU SOLVE YOUR PROBLEM... COTTA TRANSMISSION CO., ROCKFORD, ILL.

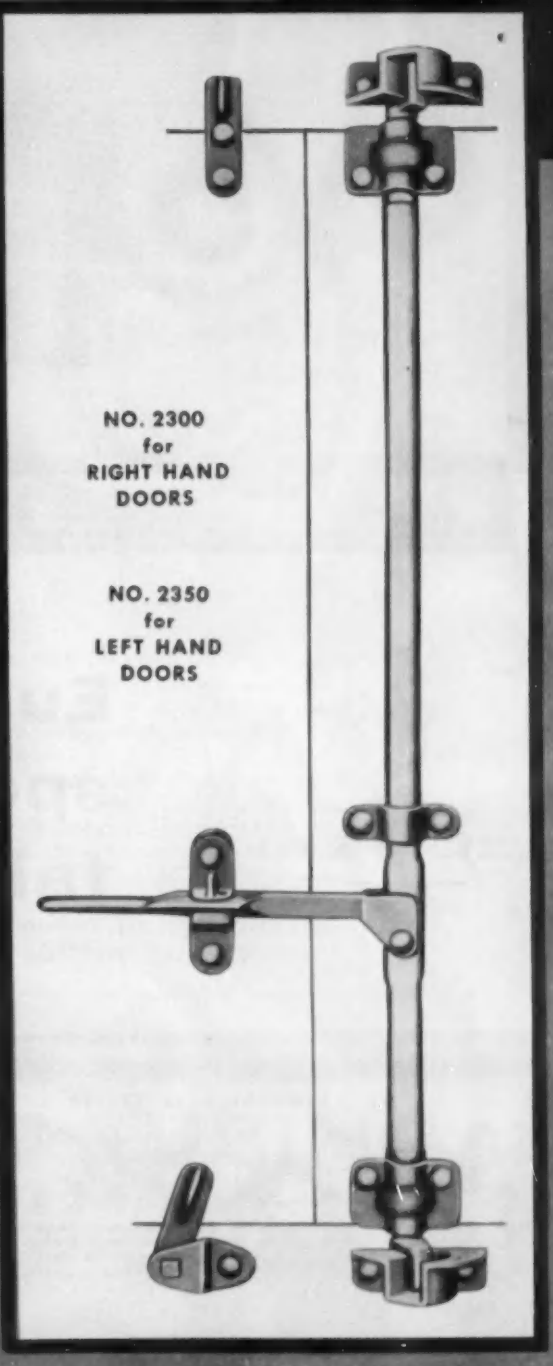

28
LEADING ENGINE BUILDERS
USE SEALED POWER
CHROME RINGS
Ever since early in World War II, when Sealed Power manufactured millions of chrome-faced piston rings for the Armed Forces, Sealed Power has been a leading authority on the application of chrome plating to cast iron.
As the use of chrome has followed the development of modern engines, more and more leading engine builders have adopted Sealed Power chrome rings, both for original equipment and replacement sets. Today the total is 28, and the number is still growing.
Sealed Power's method of applying chrome results in a plating that is heavy and permanent. Sealed Power's method of factory-lapping to a light-tight finish assures fast break-in and immediate oil control.
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MUSKEGON, MICHIGAN
Sealed Power
PISTON RINGS · PISTONS
CYLINDER SLEEVES

MINER TUBULAR BAR TYPE *Door Fasteners*

DROP-FORGED !

FOR TRUCK AND TRAILER BODIES

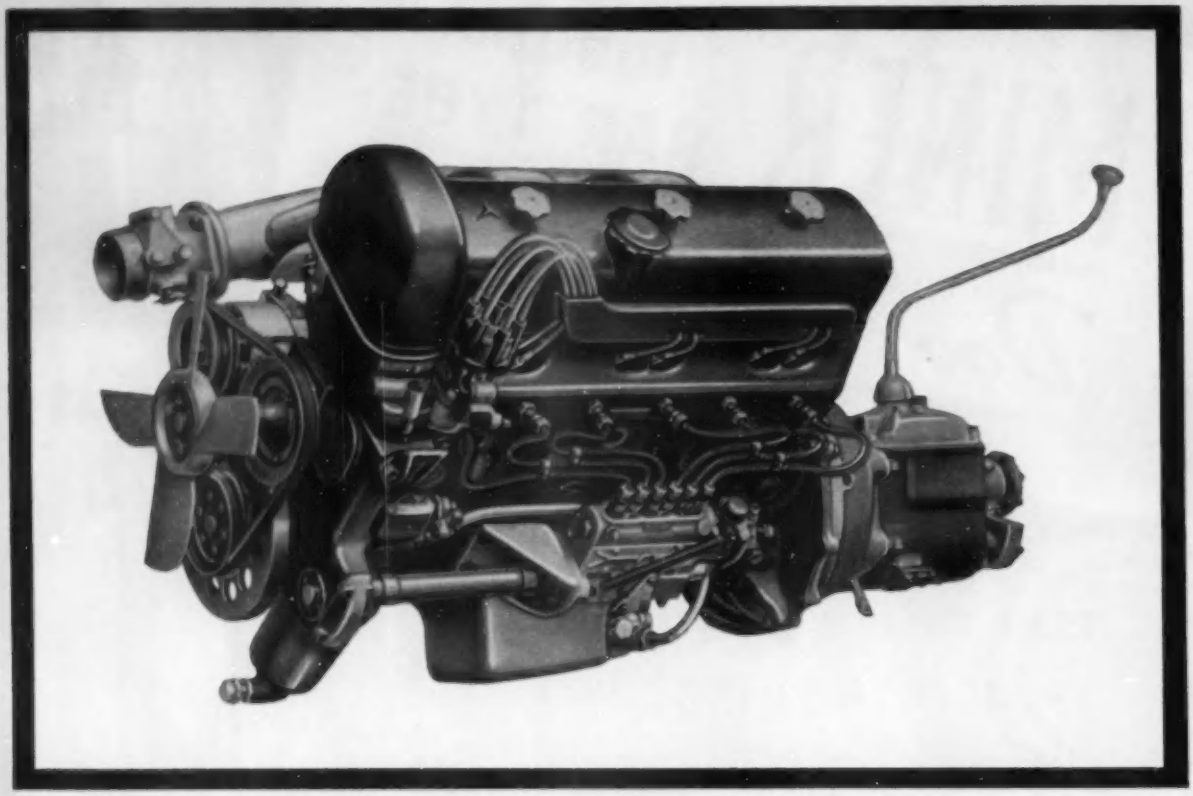
The Miner Truck Door Fastener, No. 2300, is applicable to all sizes of rear and side doors, either single or double, and is particularly desirable for refrigerator bodies. The highly dependable features of the Miner Bar Type Fastener which have always been widely accepted by the truck builders and operators have been retained in this new fastener. Refinements in the component parts have been accomplished by the drop-forging process, which permits the use of special carbon steels of unusual hardness in texture and vastly stronger and denser than the malleable iron product, thereby guaranteeing longer endurance in a service that demands reliability of operation. The vertical locking bar of scientifically designed oval section has the rigidity and torsional strength necessary to withstand the rugged operating conditions which exist at loading platforms.



NO. 2300
for
RIGHT HAND
DOORS

NO. 2350
for
LEFT HAND
DOORS

W. H. MINER, INC.
CHICAGO



Above, engine of *Mercedes Benz Type 300SL* sports car, shown on opposite page. Bundyweld Tubing is used in this car. Bundyweld's wide acceptance in the foreign car market can be attributed to the same dependability which has led to its use in 95% of today's cars, in an average of 20 applications each.



Europe's exciting sports cars put faith in Bundyweld



WHY BUNDYWELD IS BETTER TUBING



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .



continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .



Bundyweld, double-walled and brazed through 360° of wall contact.



← **NOTE** the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

Mercedes Benz Type 300SL, a fast, sleek, precision-built car, is manufactured in Stuttgart, Germany, by the Daimler-Benz Company, the world's oldest automobile manufacturer. It weighs approximately 2,800 pounds and has a maximum speed of 165 miles per hour.



Europe's sleek, glamorous sports cars back up their superb styling with astonishing records for dependability-plus, under the most grueling performance tests.

Part of the reason for this record for dependability lies in the fact that many of these precision-built sports cars use leakproof Bundyweld Tubing for hydraulic brake lines, oil lines, "petrol" lines, other important uses.

Foreign car manufacturers, like American auto makers, have learned that they can always rely on Bundyweld Tubing. Here's why:

Bundyweld is leakproof by test: thinner walled yet stronger; can withstand heavy vibration fatigue, punishing wear; has high bursting strength; takes easily to standard protective coatings. It's the only tubing double-walled from a single metal strip, copper-brazed throughout 360° of double-walled contact.

Bundy's world-wide facilities stand ready to help you with expert engineering assistance; superb fabrication facilities; prompt, on-schedule deliveries, and a sincere desire to help you solve your tubing problems. Call, write or wire.

BUNDY TUBING COMPANY
DETROIT 14, MICHIGAN

Affiliated plants in Australia, England, France, Italy, Germany

BUNDYWELD TUBING®

DOUBLE-WALLED FROM A SINGLE STRIP

Bundy Tubing Distributors and Representatives: *Cambridge 42, Mass.:* Austin-Hastings Co., Inc., 226 Binney St. • *Chattanooga 2, Tenn.:* Pelson-Deakins Co., 823-824 Chattanooga Bank Bldg. • *Chicago 32, Ill.:* Lapham-Hickey Co., 3333 W. 47th Place • *Elizabeth, New Jersey:* A. B. Murray Co., Inc., Post Office Box 476 • *Los Angeles 58, Calif.:* Tubesales, 5400 Alcoa Ave. • *Philadelphia 3, Penn.:* Reton & Co., 1717 Sansom St. • *San Francisco 10, Calif.:* Pacific Metals Co., Ltd., 3100 19th St. • *Seattle 4, Wash.:* Eagle Metals Co., 4755 First Ave., South *Toronto 5, Ontario, Canada:* Alloy Metal Sales, Ltd., 181 Fleet St., E. • **Bundyweld nickel and Monel tubing are sold by distributors of nickel and nickel alloys in principal cities.**



Say—

PER-MAX

AUTOMOTIVE ENAMEL



get—

SUPER SMOOTH

WORKABILITY

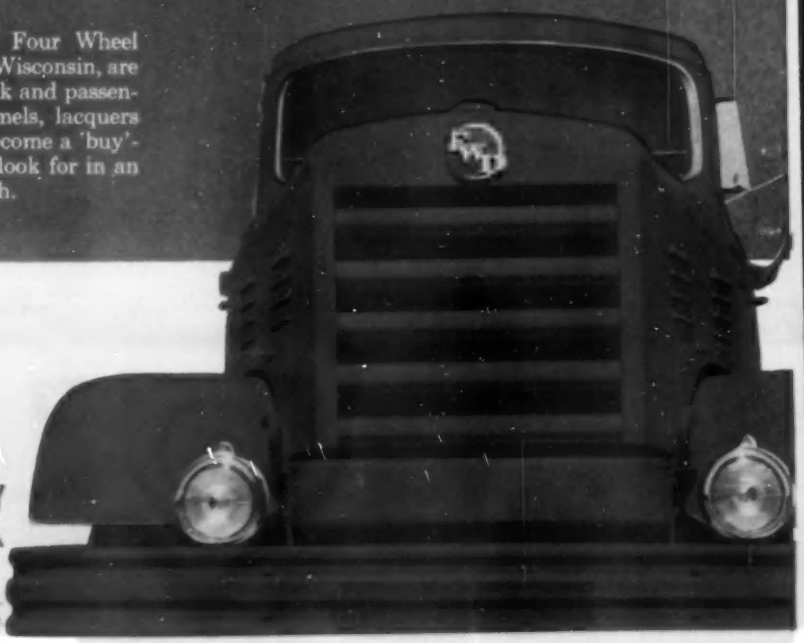


get—

SUPER FAST

DRYING

FWD TRUCKS, manufactured by the Four Wheel Drive Auto Company of Clintonville, Wisconsin, are another of many long-established truck and passenger cars using R-M automotive enamels, lacquers or undercoats. Since 1919 R-M has become a 'buy'-word among men who know what to look for in an automotive or industrial product finish.



R-M

RINSHED-MASON COMPANY

DETROIT 10, MICHIGAN • ANAHEIM, CALIFORNIA

WINDSOR, ONTARIO, CANADA

Manufacturers of fine lacquers and enamels for automobiles, trucks, farm equipment, railroad equipment, appliances and numerous other products of industry

The BUY word for Socket Cap Screws is ALLEN

The *easy* way to make sure of greater strength, better fit and uniform quality in socket cap screws is to order "not just Allen-type but genuine ALLEN."

PRESSUR-FORMING



The latest improvement in the cold forging method originated by Allen. The tough Allenoy steel fibers are preserved continuous and uncut.



GRIP HEAD CAP SCREWS
The world's easiest starting, straightest driving, firmest holding cap screws.



FLAT HEAD CAP SCREWS
For firm fastening with flush surfaces. Especially adapted to fastening thin plates and sheets.



BUTTON HEAD CAP SCREWS
Produces smooth streamlined appearance where countersinking is impractical.

STAINLESS STEEL



Bright, non-corroding, high tensile strength type 18-8. 151 popular sizes (NC & NF) *available from stock.*

THE ALLENUT

Provides a ready-made threaded hole for use with cap screws in soft materials and for repair applications. Endless uses for compact design, space saving.



Sold Only Through Leading Industrial Distributors

Take advantage of their large stocks and fastener experience. Write direct for General Catalog G55.

ALLEN
MANUFACTURING COMPANY
Hartford 2, Connecticut, U.S.A.

ALLEN HEAD

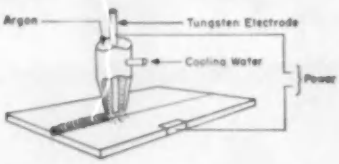
3 Modern Methods

BOOST...

- Production
- Profits
- Quality

Whatever your fabricating needs—in small shops or on production lines, on carbon steel, complex alloys or non-ferrous materials—LINDE has a high-speed, cost-saving electric welding process for every job. Here is the line-up of this top-notch team...





HELIARC Welding—*ideal for metals .020 in. and thicker*... Joins all commercial metals in easy operations—attains speeds over 100 inches per minute . . . Welding is done in all positions on all types of joints with portable manual, semi-automatic, and mechanized equipment.

There is no slag, spatter, or smoke—the operator can see and control the weld puddle at all times. Weld finishing is seldom necessary, and investment and maintenance costs are low.

Linde Air Products Company
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
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The terms "Heliarc," "Linde," and "Unionmelt" are registered trade-marks of Union Carbide and Carbon Corporation.

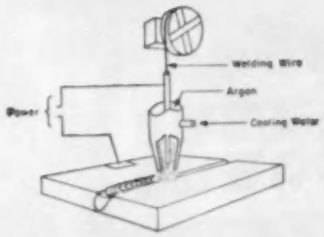
Linde Trade-Mark

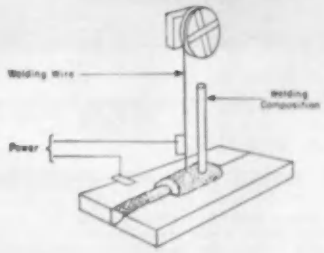
MAKING THE GRADE with

For Joining Metals.....









Sigma Welding—*4 times faster wire deposition than by manual rod feed methods* . . . Full penetration up to ¼-in. in a single pass . . . Joins all commercial metals —and attains speeds of more than 100 inches per minute on many operations.

Uses any d.c., or c.p. (constant potential) power supply. With c.p., an operator has only to set the wire feed rate—current remains essentially constant throughout welding. Both manual and automatic mechanized sigma welding equipment is easy to operate and maintain.

UNIONMELT Welding—*joins metal of any thickness . . . Up to 3-in. thick in one pass.* Extreme depth of penetration and high rate of wire feed make this the fastest and usually the most economical of all welding processes. Deep penetration or wide shallow beads are easily attained by UNIONMELT welding.

Both portable manual and mechanized setups are available, and can use any a.c., d.c., or c.p. (constant potential) power supply. With c.p., no control is necessary to maintain constant arc voltage throughout welding.

Start Saving Now — Call Your Local LINDE Representative Today . . .

Ask for Form 7942, "Modern Methods of Joining Metals."

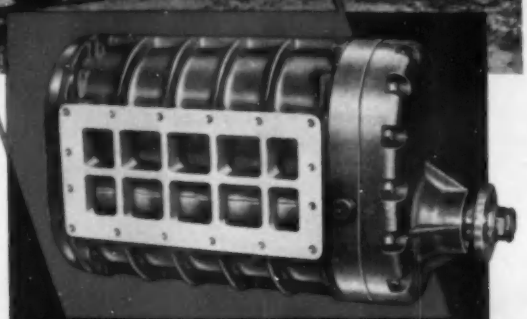
MAKING THE GRADE with Supercharged Power!



SUPERCHARGERS PUT EXTRA OOMPH IN YOUR ENGINES, REDUCE WEIGHT PER HORSEPOWER!

Pulling a 50-ton load of copper ore up an 18% grade from pit to crusher is rough and rugged work for any truck. But these big, fast-moving Diesels take the hill "right in stride" . . . thanks to Miehle-Dexter Supercharged Power. More than that, operators at this Arizona open-pit mine reported sharply reduced maintenance costs and big dividends in fuel economy when they switched to Diesel trucks equipped with Miehle-Dexter Superchargers.

MIEHLE-DEXTER SUPERCHARGERS have won universal acceptance on engines of leading Diesel engine manufacturers, including Buda, Cummins, Fairbanks-Morse, Murphy and others. If you, too, want to boost the horsepower of your engines by *50% or more* . . . and *decrease weight-per-horsepower*, too, call on M-D engineers. They can specify the exact size and type M-D Supercharger for your engines, and you'll find the investment far less than required by any other method. Standard M-D models available for applications from 100 to 750 hp. Write for bulletin.



FOUR FEATURES PROVE MIEHLE-DEXTER SUPERCHARGERS BETTER ON THE JOB

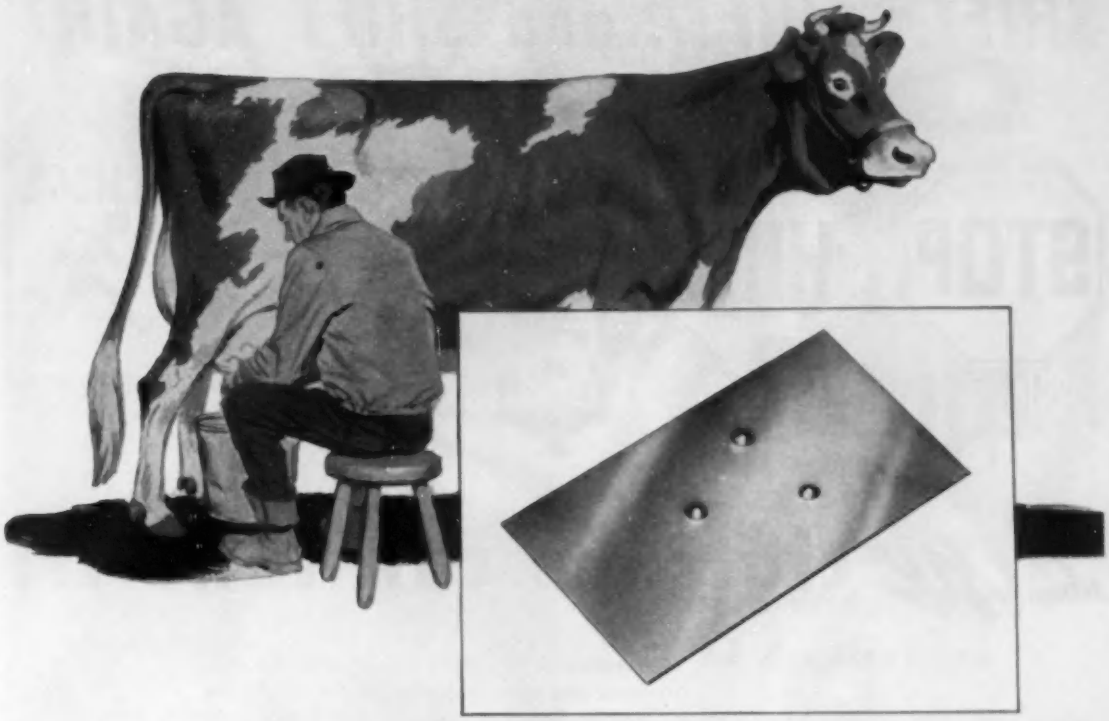
- Patented end plate seals eliminate metal-to-metal contact, assure longer life, help achieve fuel savings.
- Rotor wear strips eliminate contact between rotors and housing, assure longer wear.
- Lightweight aluminum rotors and aluminum case boost engine horsepower, do not add weight, allow high speeds.
- All parts are standardized, allowing easy field service and interchangeability.

MIEHLE-DEXTER SUPERCHARGER

DIVISION OF THE DEXTER FOLDER COMPANY

100 FOURTH STREET • RACINE, WISCONSIN

Trust M-D Superchargers for internal combustion engines . . . use them for blower and air compressor operations, too.



The bumper mount and the 3-legged stool

A case history of interest to any manufacturer who uses flat-rolled steel.

A little piece of steel like that shown above serves as an automobile bumper mount. Originally, this mount was to be projection-welded to the bumper at each of four points. But during the welding process, at the supplying manufacturer's plant, one point of the mount either refused to take the weld, or it broke easily under strain.

Time was running out. Production lagged and costs skyrocketed. And then a Great Lakes Steel Technical Service Representative was called in. He discovered that, regardless of how flat the rectangular mounting might be, it was virtually impossible to get a strong projection weld at all four corners. But when he eliminated one weld, the plate snuggled into the bumper and made perfect contact on three points—just like a three-legged stool! Three welds were actually stronger than four.

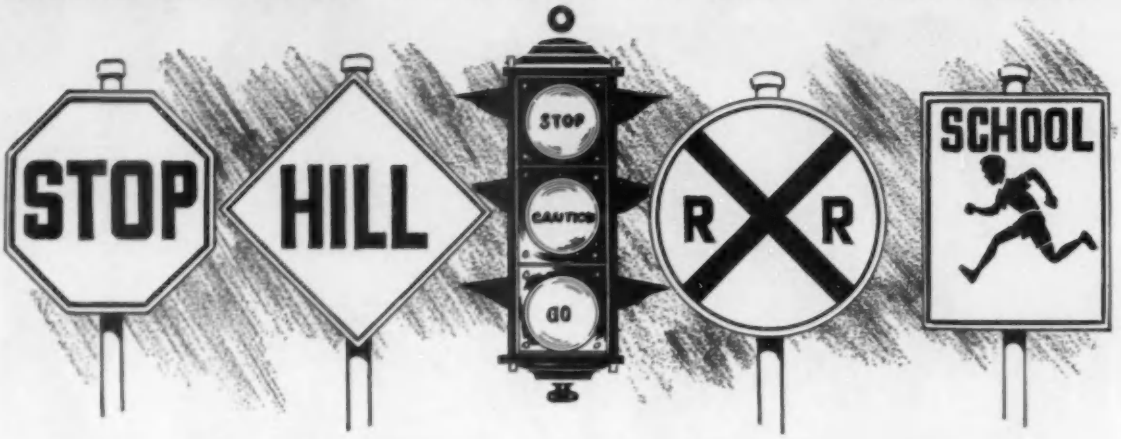
Solving problems is a tradition at Great Lakes Steel. As specialists in flat-rolled products, Great Lakes has had to come up with the right answers to problems in many fields. It will pay you to take advantage of this reservoir of experience next time you have a problem that concerns flat-rolled steel.

GREAT LAKES STEEL CORPORATION
Ecorse, Detroit 29, Mich. • A unit of
NATIONAL STEEL CORPORATION

PRODUCED BY NAX HIGH-TENSILE STEEL

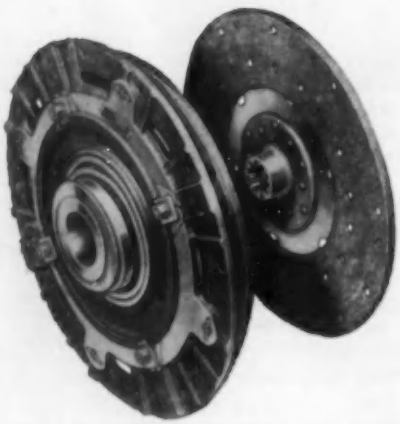
SALES OFFICES IN BOSTON, CHICAGO, CINCINNATI, CLEVELAND, HOUSTON, INDIANAPOLIS, LANSING, LOS ANGELES, NEW YORK, PHILADELPHIA, PITTSBURGH, ROCHESTER, ST. LOUIS, SAN FRANCISCO AND TORONTO

SHIFT...SHIFT...and SHIFT AGAIN!



Lipe clutches can take it!

A traffic sign or signal light may mean another —and another—clutch engagement . . . yet the Lipe ML Clutch engages so smoothly there's no grab, shock or jerk.

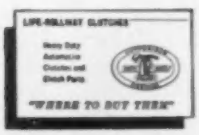


Perfect engagement like this means less stress on the engine, drive line, axle and rubber—less maintenance—more mileage between teardowns.

Why LIPE Clutches Last Longer . . .

There's only one spring. This acts on 20 levers which press instantly and uniformly on the pressure plate. Friction surfaces are brought together with absolute parallelism. No cocking of the plate—no high spots, no localized burning. Simple shim adjustment maintains this precise engagement over long-time operation.

Write for free Lipe Clutch Service Manual. For quick service on genuine Lipe parts, look for this ad in the yellow pages of the telephone directory in principal cities.



LIPE ROLLWAY

Lipe - ROLLWAY CORPORATION

Manufacturers of Automotive Clutches and Machine Tools

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Power Steering
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MOTOR TRUCKS



Lubrication
Transmission
Power Steering

TRACTORS



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Implement Control

MECHANICAL FURNITURE



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Raising and Lowering

BUILDINGS



Door Openers
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HOME APPLIANCES



Servo Operations

ORDNANCE



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?

AND IN YOUR PRODUCT

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Provide Silent Hydraulic Power for a Wide Range of Applications

Eaton Pumps provide a source of hydraulic power or vacuum for an almost endless list of applications. Outstanding characteristics are compact design, silent operation, high mechanical and volumetric efficiency at all speeds, and competitive cost. Millions of Eaton Pumps are in use today in leading motor cars, trucks, tractors, aircraft, and appliances.

Eaton engineers will welcome the opportunity to discuss the application of Eaton Pumps to your products.

EATON

PUMP DIVISION

MANUFACTURING COMPANY

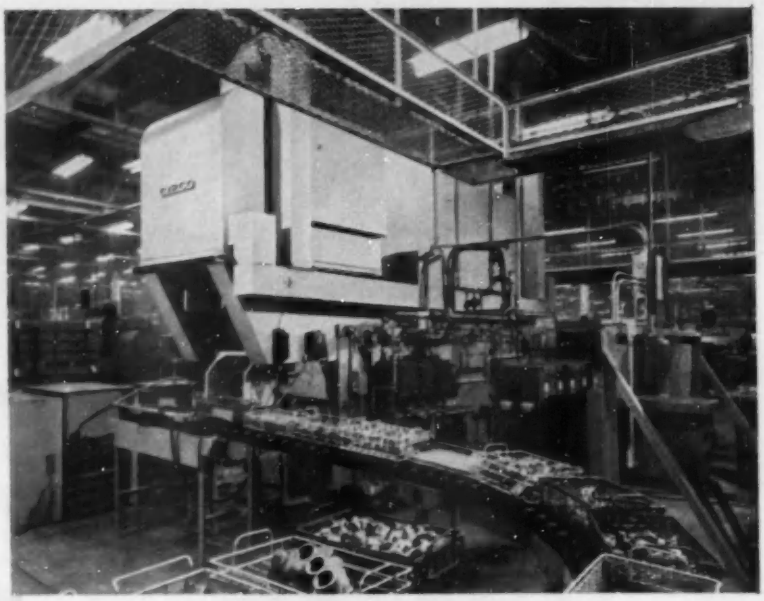
9771 FRENCH ROAD • DETROIT 13, MICHIGAN

General Offices: CLEVELAND, OHIO

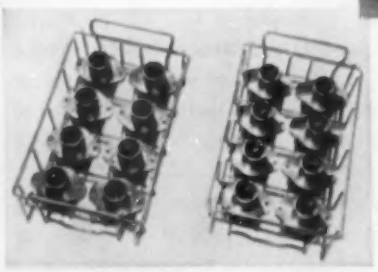
PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

WORLD'S LARGEST ULTRASONIC DEGREASER NOW ASSURES EVEN FINER *Safety* POWER STEERING

New Installation at Saginaw Steering Gear "Scrubs" Component Parts Microscopically Clean with 200,000 cps Ultrasonic Waves



Parts move through Saginaw's new Ultrasonic Degreaser at speeds from 1.7 to 4.8 feet per minute at Buena Vista Plant



Note startling transformation in appearance of parts (right) after ultrasonic cleaning

Hydraulic pumps, valves and other vital components of *Safety* Power Steering are now being assembled with a degree of cleanliness never before achieved in the automotive industry—thanks to the world's first application of ultrasonic degreasing to heavy mass production. The elimination of microscopic contamination before assembly will insure far less wear and longer trouble-free performance for closely-fitted *Safety* Power Steering parts operating under heavy hydraulic pressure.

In this new cleaning unit, 30 barium titanate transducers convert 200,000 cps alternating current into ultrasonic waves which violently agitate the molecules of a special degreasing solvent in which the parts are immersed. This creates a "scrubbing" action which removes even the most minute particles of dust, dirt, metal and grease from every recess. The complete operation is fully automatic as the parts are conveyed on carriers through preliminary cleaning, final ultrasonic cleaning, rinsing and vapor drying. The solvent is constantly filtered, distilled and re-used.

This pioneering quality advancement is proof again that the familiar Saginaw "S" stands for *superior* facilities, know-how and *service* to the automotive and aviation industries. How may we help *you*?



WORLD'S LARGEST BUILDER OF POWER AND MANUAL STEERING GEARS

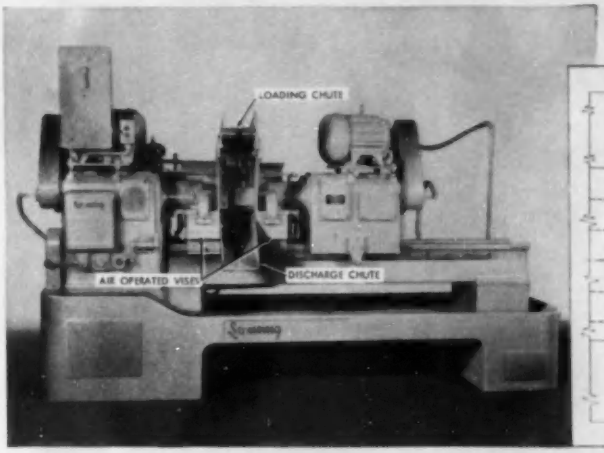
Saginaw

STEERING GEAR DIVISION

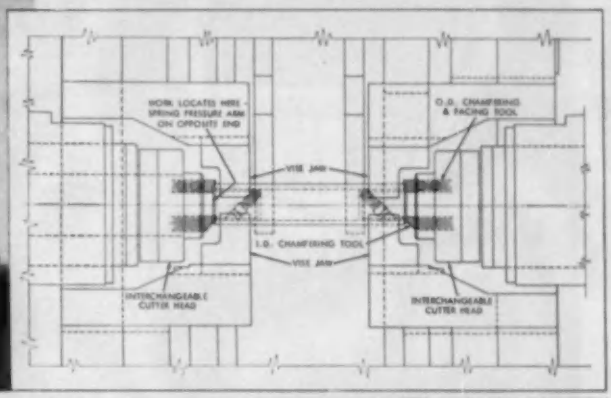
GENERAL MOTORS CORPORATION • SAGINAW, MICHIGAN

MACHINE OF THE MONTH

PREPARED BY THE SENECA FALLS MACHINE CO. "THE Lo-swing PEOPLE" SENECA FALLS, NEW YORK



TOOLING LAYOUT



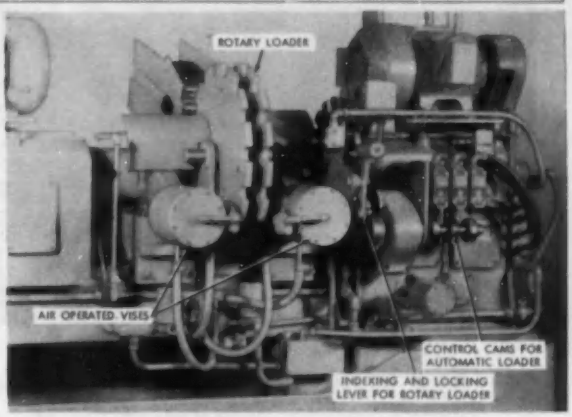
BEARING TUBES HANDLED AND MACHINED AUTOMATICALLY ON MODEL CS DRILLING AND CENTERING MACHINE

PROBLEM: To automatically load and unload Bearing Tubes, bore both ends for a depth of 1-5/8", face to length and chamfer inside and outside diameters on both ends.

SOLUTION: The Model CS Automatic Drilling Machine selected for this job was equipped with Special Rotary Type Automatic Handling Equipment and Semi-standard, Air-Operated Vises shown in the illustration.

The tubes, previously cut to length, arrive by conveyor and are fed by gravity into the rotary loader from the loading chute mounted on the front of the machine. The rotary loader is indexed in timed relation to the machine cycle and carries the parts into working position where they are clamped in the air-operated vises.

The tubes are accurately located endwise in the vises by means of a fixed stop on one end and a spring-loaded pressure arm on the opposite end. After the parts are securely clamped, the cutter



heads advance in rapid traverse, slow down to normal feed during the boring, facing and chamfering operations, and then return in rapid traverse to the starting position. The vise jaws open as soon as the tools clear the work, and the rotary loader indexes a rough part into working position while discharging the finished part into the discharge chute.

The operation is entirely automatic. One operator can look after several machines. A production of 265 pieces per hour is easily maintained. Seneca Falls engineers are at your disposal to help solve your AUTOMATION problems.

SENECA FALLS MACHINE CO., SENECA FALLS, N. Y.

PRODUCTION COSTS ARE LOWER WITH Lo-swing



United Air Lines first to offer all-cargo flights keeps on bringing you "firsts" in freight service!

United was the first scheduled airline to offer all-cargo flights (1940)... the first with specially-equipped "flying freight cars" (1943)... and through the years the "firsts" have kept right on coming from United Air Lines.

For example, United Air Lines now offers you Reserved Space Air Freight. It's new. It's exclusive with United in the U. S. You can reserve space for your freight shipments in advance, previous consideration having been given mail and express space needs.

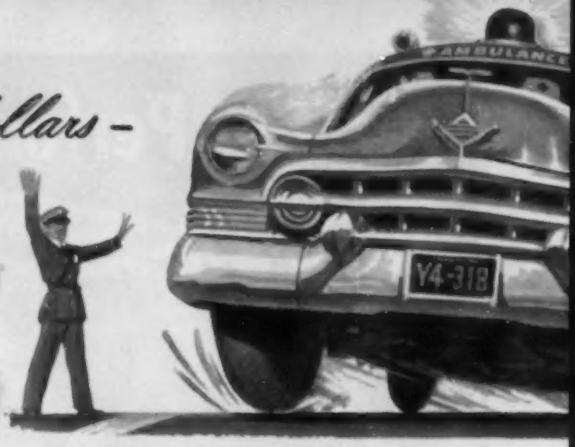
Also new, are interline arrangements whereby you can ship via United Reserved Space to 34 foreign countries the world over!

For more information about United Air Freight, write for new booklet, "Industry's Flying Partner," Cargo Sales Dept. I-3, United Air Lines, 5959 S. Cicero Ave., Chicago.

More than 254 United flights daily
—Air Cargo on every one



When fast starts mean lives or dollars –





Globe batteries are on the job

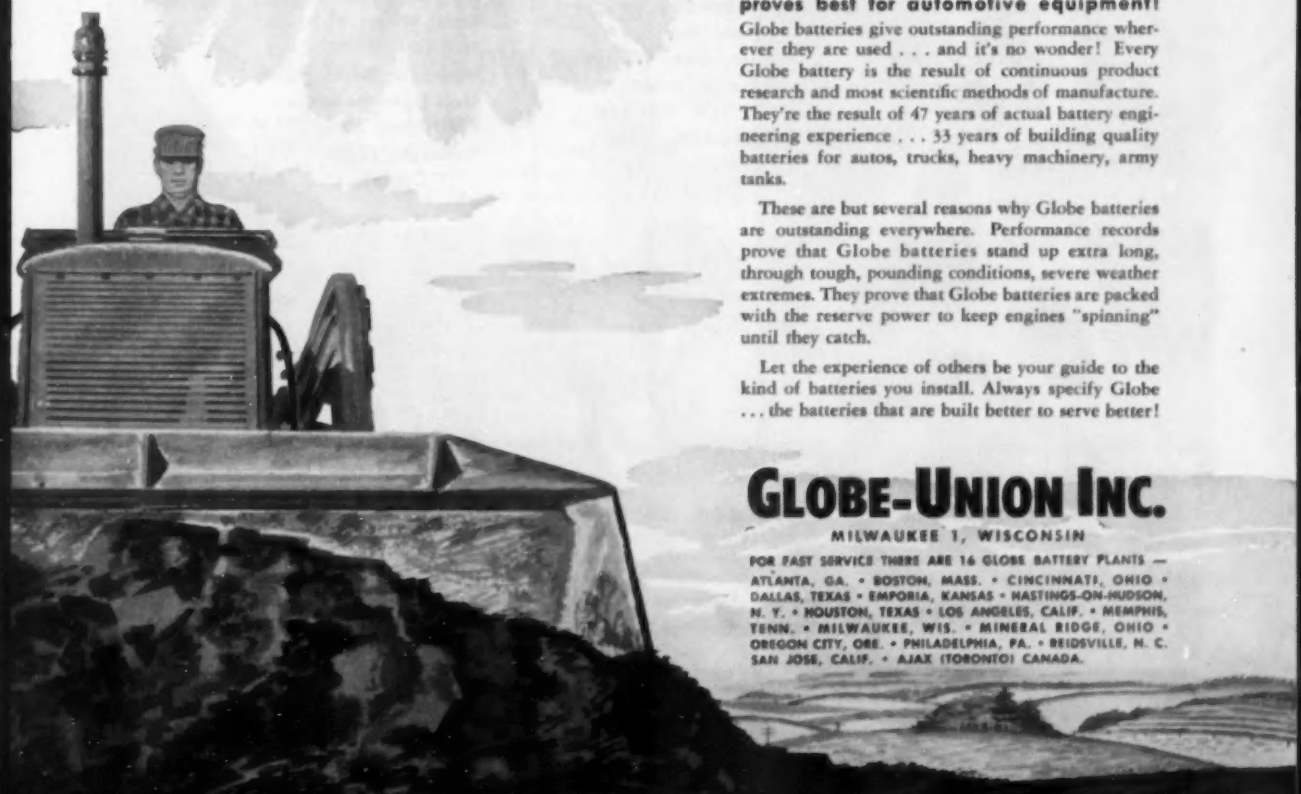
...EVERY TIME!

The same battery performance that helps save lives in emergencies . . . that saves dollars for heavy machinery users . . . proves best for automotive equipment!

Globe batteries give outstanding performance wherever they are used . . . and it's no wonder! Every Globe battery is the result of continuous product research and most scientific methods of manufacture. They're the result of 47 years of actual battery engineering experience . . . 33 years of building quality batteries for autos, trucks, heavy machinery, army tanks.

These are but several reasons why Globe batteries are outstanding everywhere. Performance records prove that Globe batteries stand up extra long, through tough, pounding conditions, severe weather extremes. They prove that Globe batteries are packed with the reserve power to keep engines "spinning" until they catch.

Let the experience of others be your guide to the kind of batteries you install. Always specify Globe . . . the batteries that are built better to serve better!



GLOBE-UNION INC.

MILWAUKEE 1, WISCONSIN

FOR FAST SERVICE THERE ARE 16 GLOBE BATTERY PLANTS — ATLANTA, GA. • BOSTON, MASS. • CINCINNATI, OHIO • DALLAS, TEXAS • EMPORIA, KANSAS • HASTINGS-ON-HUDSON, N. Y. • HOUSTON, TEXAS • LOS ANGELES, CALIF. • MEMPHIS, TENN. • MILWAUKEE, WIS. • MINERAL RIDGE, OHIO • OREGON CITY, ORE. • PHILADELPHIA, PA. • REIDSVILLE, N. C. SAN JOSE, CALIF. • AJAX (TORONTO) CANADA.

if it's petroleum-powered *there's a* **GLOBE-BUILT BATTERY** *...right from the start*

For Top Performance...

UNDER THE HOOD and UNDER THE CHASSIS



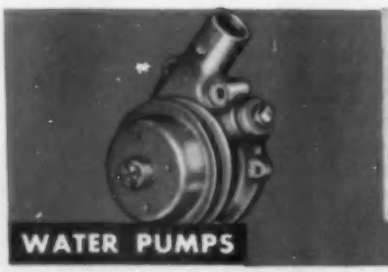
Specify AIRTEX PRODUCTS

CONSIDER THE SOURCE!

YEARS OF successful manufacturing for the automotive market have given AIRTEX the "know-how" to *meet and surpass* original equipment specifications. Our huge, modern plant facilities and engineering skill are available to help solve many of *your* procurement problems. FOR *TOP PERFORMANCE* UNDER THE HOOD OR UNDER THE CHASSIS, SPECIFY AIRTEX PRODUCTS.

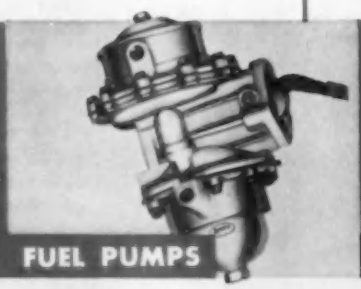
manufacturers of:

Front End Suspension Parts
King Bolt Sets
Front Wheel Bearings
Hydraulic Brake Parts
Hydraulic Brake Hose
Stop Light Switches
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WATER PUMPS

Engineered to original equipment specifications. Patented, long-life seals and lifetime-lubricated bearings. Every pump 25-inch vacuum tested and unconditionally guaranteed.



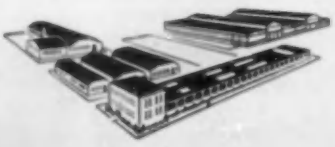
FUEL PUMPS

Single and dual types — featuring genuine Nuprene diaphragm, patented valve cage assembly, and long-wearing rocker-arm and linkage. Rigidly tested to insure trouble-free performance.



TIE ROD ENDS

Exact duplicates of original equipment specs—*made better* by exclusive AIRTEX features! Rolled threads, phosphor bronze seat, ball bearing construction, and Neoprene washer and dust shield.



Write for complete illustrated brochure

AIRTEX PRODUCTS INC.
Fairfield, Illinois

Quality | performance you can count on



O-M (air • hydraulic) CYLINDERS

Designed and engineered to last... to give prolonged service with minimum maintenance. Husky, smooth functioning O-M cylinders are constructed of steel, with precision-machined bronze bearing surfaces. *Special Interlocking Mechanism* eliminates bulky tie-rods, end caps—saves ⅓ installation space. This feature also assures perfect alignment, lower coefficient of friction. Easily removed, inspected, repaired. Every unit power-tested to rigid standards.

Standard, semi-standard, "special" air and hydraulic cylinders available in full range of sizes (1½" to 8" bores) with standard, 2 to 1 or oversize rods. Completely interchangeable parts. Immediate delivery on many sizes.



fits where others won't!



mail coupon now!

for FREE catalog, complete set of ½-scale templates, showing all cylinders, mounts and mounting brackets.

ORTMAN-MILLER MACHINE COMPANY
17—143rd Street, Hammond, Indiana

☐ Have representative call ☐ Send latest catalog ☐ Send ½-scale templates

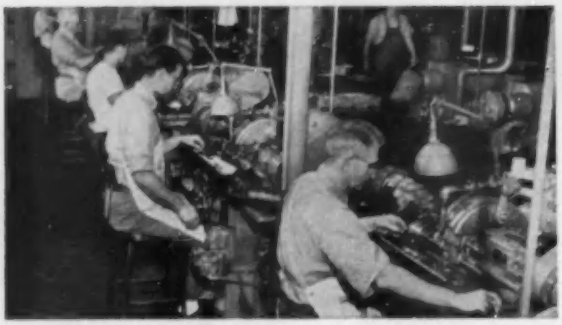
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TAP PRODUCTION IS HY-PRO'S SPECIALTY



HY-PRO SPECIALIZES tap making within every department —from design through all manufacturing operations— to insure the highest-quality product for you.



THE HIGH DEGREE OF AUTOMATIC OPERATION in Hy-Pro's production lines means the prompt delivery of your order, while maintaining tolerances down as low as .0001 in.

. . . it can help cut man-hours from your operation

Tap production is specialized at Hy-Pro. The full staff concentrates their work on this one important line. Every operation in the manufacture of Hy-Pro taps is constantly restudied and re-evaluated to bring you the finest quality product at a minimum cost.

It is this dependable record through the years which has won Hy-Pro their reputation as "*The Tap Specialists*".

It will pay you to get in touch with your Hy-Pro distributor or to call Hy-Pro direct. They offer you a full line of highest-quality taps, backed by the experience of specialized production.



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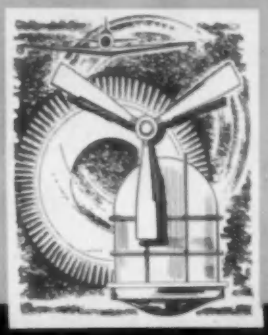
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HY-PRO TOOL CO., NEW BEDFORD, MASS., U. S. A.

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AVIATION SECTION

2

PRODUCTION—CIVIL AIRCRAFT • CIVIL AIRCRAFT ENGINES **REGISTRATIONS**—CIVIL AIRCRAFT • **SCHEDULED AIR CARRIER OPERATION STATISTICS** • **SPECIFICATIONS AIRCRAFT**—CIVIL • U. S. AND FOREIGN • MILITARY • U. S. AND FOREIGN • **ENGINES**—U. S. RECIPROCATING • U. S. AND BRITISH GAS TURBINES •

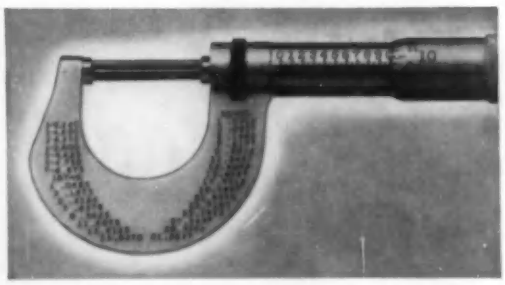
AI
AUTOMOTIVE INDUSTRIES
37TH ANNUAL STATISTICAL ISSUE • 1955



*consistent quality

is as important in the pin as in the gear

To function effectively, a spring pin must drive easily into holes drilled to normal production tolerances, compressing as driven. To drive easily, hold firmly and fit flush, the pin —*every* pin—must meet the strict requirements of specifications such as those prepared by the SAE and the Military Services.



Since failure of a pin can be as costly as a failure of any other precision part, it is important to check the pins *you* buy for uniformity . . . uniformity of diameter and length, shear strength, hardness, insertion and removal forces, and recovery of diameter.

Rollpin has been tested many times—by many manufacturers—with a consistently high performance record. It has been widely recognized as the "quality" fastener of its type. In this case, quality can be—and should be—measured. We strongly urge that you test for quality when buying spring pins.



ELASTIC STOP NUT CORPORATION OF AMERICA

Dept. R28-35, Elastic Stop Nut Corporation of America
2330 Vauxhall Road, Union, New Jersey

Please send the following free fastening information:

☐ Rollpin samples
☐ Rollpin bulletin
☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name_____ Title_____

Firm_____

Street_____

City_____ Zone___ State_____



AVIATION DATA

PRODUCTION • REGISTRATIONS • EXPORTS

Aircraft and Aircraft Engine Production, by Years

Year	Aircraft				Aircraft Engines		Value of All Products
	Civil	Military	Total	Value	Number	Value	
1927	1,286	609	1,995	$ 14,504,999	1,600	$ 9,492,000	$ 30,897,000 •
1928	3,429	847	4,346	.....	.....	.....	64,662,000 •
1929	5,414	779	6,193	51,508,120	6,276	24,905,000	91,031,000 •
1930	2,601	836	3,437	.....	.....	.....	60,846,000 •
1931	1,947	853	2,800	21,790,000	3,794	13,779,000	48,540,000 •
1932	896	500	1,396	.....	.....	.....	24,561,000 •
1933	993	331	1,324	15,859,995	1,823	8,651,247	28,157,000 •
1934	1,222	393	1,615	.....	.....	.....	43,892,000 •
1935	1,374	336	1,710	17,454,231	2,866	12,610,285	42,506,000 •
1936	2,152	858	3,010	.....	.....	.....	78,149,000 •
1937	2,915	858	3,773	38,664,153	6,214	26,576,971	114,093,000 •
1938	2,698	925	3,623	.....	.....	.....	198,293,000 •
1939	4,935	921	5,856	75,272,587	11,172	74,282,000	247,905,000
1940	6,785	6,019	12,794	146,000,000	22,667	101,000,000	370,000,000
1941	6,844	19,433	26,277	$19,000,000	58,181	436,000,000	1,804,000,000
1942	n.p.	47,836	47,836	2,762,000,000	138,089	1,314,000,000	5,317,000,000
1943	n.p.	85,898	85,898	6,696,000,000	227,116	2,226,000,000	12,514,000,000
1944	n.p.	96,318	96,318	9,233,000,000	256,911	3,075,000,000	16,047,000,000
1945	2,047	47,714	49,761	5,141,000,000	109,650	1,650,000,000	8,279,000,000
1946	26,001	1,669	26,670	262,772,192	43,407	126,860,393	629,505,723
1947	15,870	2,100	17,970	444,421,000	21,178	237,078,000	1,341,503,000
1948	7,302	2,489	9,791	114,207,590	9,032*	30,017,250	231,636,143‡
1949	3,545	....	3,545	121,416,324	3,982*	14,236,809	224,063,885‡
1950	3,520	....	3,520	100,097,000	4,314*	20,058,000	217,162,000‡
1951	2,477	....	2,477	83,844,000	4,580*	25,903,000	271,031,000‡
1952	3,509	....	3,509	127,151,000	5,382*	40,722,000	426,970,000‡
1953	4,134	....	4,134	244,418,000	6,647*	70,854,000	495,404,000‡
1954	3,389	....	3,389	295,738,000	5,519*	60,647,000	522,916,000‡

Sources of data: Odd years 1919 through 1939 and the year 1947, as reported by the Census of Manufactures. For the years 1940 through 1946, as reported by War Production Board and Civilian Production Administration. 1947 through 1954, as reported by Civil Aeronautics Administration and Bureau of the Census.

n.p.—No production other than military.

•—Value of aircraft, engines, parts, parachutes, etc., from C.A.A. and Bureau of the Census.

‡—Value of shipments of all products of civil aircraft and civil aircraft engine plants.

*—Civil aircraft engine production only.

Note:—The value of engines, propellers and power plant accessories installed in the aircraft are not included in the value of the aircraft reported for 1931 through 1954.

Shipments of Complete Civil Aircraft and Parts

In Units and Their Value

As reported by the Bureau of the Census and C.A.A.

Month	Complete Aircraft				Value of Aircraft Parts		Total Value Aircraft and Parts	
	Number		Value					
	1954	1953	1954	1953	1954	1953	1954	1953
January	278	365	$24,302,000	$17,744,000	$6,188,000	$7,340,000	$30,490,000	$25,084,000
February	240	382	36,830,000	17,087,000	7,299,000	7,318,000	44,129,000	24,405,000
March	312	358	23,276,000	11,730,000	7,892,000	7,550,000	31,168,000	19,280,000
April	359	402	25,882,000	15,264,000	7,360,000	9,372,000	43,242,000	24,636,000
May	309	417	26,554,000	17,422,000	7,721,000	7,023,000	34,275,000	24,445,000
June	316	339	21,709,000	20,985,000	6,606,000	7,726,000	28,314,000	28,711,000
July	293	402	23,595,000	22,117,000	6,351,000	8,464,000	30,146,000	31,581,000
August	264	350	18,705,000	17,961,000	6,542,000	7,148,000	25,247,000	25,110,000
September	265	359	26,336,000	21,047,000	10,206,000	9,240,000	36,542,000	30,287,000
October	175	235	16,565,000	20,226,000	8,562,000	8,251,000	25,427,000	28,487,000
November	288	275	18,589,000	29,308,000	6,306,000	8,714,000	24,895,000	38,022,000
December	290	250	12,794,000	32,517,000	5,541,000	8,421,000	18,335,000	40,938,000
Total	3,389	4,134	$295,738,000	$244,418,000	$86,473,000	$96,568,000	$382,211,000	$340,986,000

Shipments of Civil Aircraft Engines and Parts

In Units and Their Value

As reported by the Bureau of the Census and C.A.A.

Month	Civil Aircraft Engines				Value of Engine Parts		Total Value Engines and Parts	
	Number		Value					
	1954	1953	1954	1953	1954	1953	1954	1953
January	383	582	$4,840,000	$3,657,000	$6,565,000	$7,229,000	$11,405,000	$10,886,000
February	424	476	5,952,000	2,387,000	5,682,000	6,742,000	11,634,000	9,129,000
March	465	667	5,089,000	4,107,000	7,887,000	8,226,000	12,976,000	12,333,000
April	546	671	5,273,000	5,471,000	6,567,000	7,573,000	11,830,000	13,044,000
May	498	500	5,322,000	6,537,000	5,886,000	5,926,000	11,209,000	12,473,000
June	486	523	4,797,000	6,636,000	7,401,000	6,424,000	12,198,000	13,060,000
July	442	576	4,845,000	6,582,000	6,553,000	6,164,000	11,398,000	12,746,000
August	327	607	4,650,000	6,109,000	6,196,000	6,860,000	10,845,000	12,969,000
September	371	485	3,352,000	7,221,000	6,159,000	7,850,000	9,511,000	15,071,000
October	488	493	4,811,000	8,083,000	7,056,000	7,406,000	11,867,000	15,489,000
November	537	559	5,389,000	7,171,000	6,948,000	7,125,000	12,337,000	14,296,000
December	543	527	6,326,000	6,892,000	7,169,000	6,017,000	13,505,000	12,909,000
Total	5,519	6,647	$60,647,000	$70,854,000	$80,069,000	$83,564,000	$140,705,000	$154,418,000

Shipments of Complete U. S. Civilian Aircraft and Engines 1949-1954

Dollars, Horsepower and Weight in Thousands

As reported by the Bureau of the Census and C.A.A.

COMPLETE AIRCRAFT	1954	1953	1952	1951	1950	1949
Total Units	5,389	4,134	3,509	2,477	3,520	3,545
Under 3000 lbs. airframe weight	5,098	3,825	3,057	2,279	3,391	3,379
3000 lbs. airframe weight and over	291	309	452	198	129	166
Total Airframe Weight	10,701.6	10,768.7	9,532.3	5,111.0	5,960.7	6,744.4
Under 3000 lbs. airframe weight	3,171.1	3,471.5	2,626.3	1,907.9	2,655.2	2,430.6
3000 lbs. airframe weight and over	7,530.5	7,297.2	6,906.0	3,203.1	3,305.5	4,313.8
Total Value	$295,738	$244,418	$197,151	$88,844	$100,097	$121,447
Under 3000 lbs. airframe weight	41,492	33,388	23,852	14,201	18,618	16,101
3000 lbs. airframe weight and over	254,336	211,030	173,299	74,643	81,482	105,346
AIRCRAFT ENGINES						
Total Units	5,519	6,647	5,282	4,580	4,314	3,982
Total Horsepower (in thousands)	3,366.4	4,399.2	2,936.7	2,093.8	1,645.5	1,231.50
Total Value (in thousands)	$60,647	$70,854	$40,722	$25,909	$20,058	$14,237

Civil Aircraft Shipments by Total Rated Horsepower

As reported by the Bureau of the Census and C.A.A.

	Under 400 hp		400 hp and Over		Total Aircraft	
Month	1954	1953	1954	1953	1954	1953
January	253	318	25	26	278	345
February	205	356	35	26	240	382
March	280	342	32	16	312	358
April	316	385	43	17	359	402
May	277	394	32	23	309	417
June	273	316	43	23	316	339
July	257	378	36	24	293	402
August	234	330	30	20	264	350
September	206	333	57	26	265	359
October	146	208	29	27	175	235
November	256	247	32	28	288	275
December	263	215	27	35	290	250
Total	2,966	3,822	421	312	3,380	4,134

Civil Aircraft Shipments by Number of Places

As reported by the Bureau of the Census and C.A.A.

	5 Places & Less		Over 5 Places		Total Aircraft	
Month	1954	1953	1954	1953	1954	1953
January	253	318	25	47	278	365
February	205	356	35	26	240	382
March	280	342	32	16	312	358
April	316	385	43	17	359	402
May	277	394	32	23	309	417
June	273	316	43	23	316	339
July	258	378	35	24	293	402
August	237	330	27	20	264	350
September	212	333	53	26	265	359
October	148	208	27	27	175	235
November	258	247	30	28	288	275
December	265	215	25	35	290	250
Total	2,982	3,822	407	312	3,389	4,134

Airframe Weights (Excluding Spares) of Civil Aircraft Shipments

In thousands of Pounds, as reported by Bureau of the Census and C.A.A.

Month	1954	1953	1952	1951	1950	1949	1948	1947
January	909.4	884.0	622.9	357.0	530.9	280.6	440.5	1,634.4
February	1,243.3	832.3	761.9	292.7	413.7	774.4	474.6	1,484.0
March	904.8	641.5	826.0	316.7	402.5	709.8	701.5	1,767.9
April	1,254.1	796.8	731.3	697.0	442.1	571.4	840.2	2,141.3
May	985.4	859.9	955.3	589.0	522.9	451.4	1,397.6	1,905.8
June	1,120.6	930.4	754.8	456.2	573.7	537.7	1,370.2	1,739.8
July	894.2	1,022.8	777.7	379.1	467.4	478.4	977.5	1,151.2
August	687.6	824.4	712.9	319.6	552.9	451.4	1,397.6	1,905.8
September	899.9	941.2	932.0	330.4	523.1	676.0	828.9	1,572.3
October	578.5	804.9	915.8	227.3	325.0	647.2	794.2	1,553.7
November	699.2	1,047.7	777.9	515.8	703.1	527.3	598.8	1,922.0
December	522.5	1,153.3	762.8	630.2	506.9	584.2	588.5	548.1
Total	10,701.6	10,768.7	9,532.3	5,111.0	5,960.7	6,734.4	9,982.5	17,853.4

Employment in Aircraft and Engine Plants

Bureau of Labor Statistics

	Complete Aircraft Plants		Aircraft Engine and Parts Plants	
Month	1954	1953	1954	1953
January	502,700	473,400	179,500	167,200
February	469,900	475,600	178,500	173,900
March	479,900	478,800	178,200	176,600
April	488,500	476,800	174,500	170,900
May	496,200	475,800	169,500	172,200
June	493,800	475,200	166,200	177,400
July	488,800	478,900	162,800	179,700
August	489,800	485,300	154,200	180,200
September	496,400	490,600	161,600	182,700
October	490,800	489,100	160,200	183,800
November		486,800	....	181,700
December		483,300	....	181,600

Total Engine Hp of Civil Aircraft Engine Shipments

In thousands, as reported by Bureau of the Census and C.A.A.

Month	1954	1953	1952	1951	1950
January	285.8	367.8	247.9	181.5	140.2
February	336.2	388.8	264.9	176.7	106.8
March	292.2	365.4	253.8	179.8	132.5
April	298.2	378.1	322.6	200.5	153.1
May	299.1	391.2	260.2	216.8	167.9
June	265.3	400.5	270.2	166.1	172.7
July	263.2	400.6	228.6	164.3	142.0
August	248.9	378.4	181.7	149.6	98.7
September	191.9	418.1	271.0	191.4	118.6
October	266.5	463.1	262.3	77.4	82.8
November	284.6	412.6	198.0	193.7	143.9
December	328.1	394.6	174.7	196.0	191.3
Total	3,360.4	4,399.2	2,936.4	2,092.8	1,645.5

For additional aircraft and engine statistics see pages 230 and 231

Registrations of Civil Aircraft

As of January, 1955

Compiled from records of the Civil Aeronautics Administration

Registered U .S. Civil Aircraft by Make

Arranged by Major Manufacturer in Descending Order of Active Aircraft

Manufacturer	Number of Aircraft			Per Cent of Total		
	Active	Inactive	Total	Active	Inactive	Total
Piper	13,579	7,314	20,893	23.0	22.1	22.8
Cessna	10,471	2,546	13,017	17.8	7.7	14.1
Aeronca	6,119	4,121	10,240	10.4	12.5	11.1
Convair[1]	4,496	3,913	8,409	7.6	11.8	9.1
Beech	4,085	456	4,541	6.9	1.4	4.9
Taylorcraft	3,142	2,783	5,925	5.3	8.4	6.4
Luscombe	3,093	1,184	4,277	5.2	3.6	4.6
Ercoupe	2,875	988	3,863	4.9	3.0	4.2
Boeing[2]	1,960	1,879	3,839	3.3	5.7	4.2
Fairchild	860	2,594	3,454	1.5	7.8	3.8
All Others	8,314	5,295	13,609	14.1	16.0	14.8
Total	58,994	33,073	92,067	100.0	100.0	100.0

[1]—Includes Stinson. [2]—Includes Stearman.

Registered U. S. Civil Aircraft by Year of Manufacture

Year of Manufacture	Number of Aircraft			Per Cent of Total		
	Active	Inactive	Total	Active	Inactive	Total
1954	2,545	3	2,548	4.3	0.0	2.8
1953	2,933	383	3,316	5.0	1.2	3.6
1952	2,546	259	2,805	4.3	0.8	3.0
1951	1,644	207	1,851	2.8	0.6	2.0
1950	2,489	349	2,838	4.2	1.1	3.1
1949	2,280	387	2,667	3.9	1.2	2.9
1948	4,510	877	5,387	7.6	2.7	5.9
1947	8,491	2,394	10,885	14.4	7.2	11.8
1946	18,528	8,059	26,587	31.5	24.4	28.9
1945	1,075	744	1,819	1.8	2.2	2.0
1944	718	797	1,515	1.2	2.4	1.6
1943	2,181	3,749	5,930	3.7	11.3	6.4
Other Years	9,054	14,865	23,919	15.3	44.9	26.0
Total	58,994	33,073	92,067	100.0	100.0	100.0

Airports and Airfields

As reported by Civil Aeronautics Administration

Year Ending Dec. 31	Total	Commercial	Municipal	CAA Intermediate	All Others incl. Military
1930	1,782	564	550	354	314
1931	2,093	829	780	404	80
1932	2,117	869	777	352	119
1933	2,188	938	827	265	158
1934	2,297	872	980	259	186
1935	2,368	822	1,041	291	214
1936	2,342	774	1,037	296	235
1937	2,299	727	1,053	283	236
1938	2,374	760	1,092	267	255
1939	2,280	801	963	266	250
1940	2,331	860	1,031	289	151
1941	2,484	930	1,086	283	185
1942	2,809	1,069	1,129	273	336
1943	2,769	801	914	240	814
1944	3,427	1,027	1,067	229	1,104
1945	4,026	1,509	1,220	216	1,081
1946	4,490	1,930	1,424	201	935
1947	5,750	2,849	1,818	178	914
1948	6,414	2,989	2,050	161	1,214
1949	6,484	2,585	2,200	139	1,550
1950	6,403	2,329	2,272	76	1,726
1951	6,237	2,042	2,316	57	1,822
1952	6,042	(1)	(1)	(1)	(1)
1953	6,760	(1)	(1)	(1)	(1)

(1)—Not available.

Registered Aircraft and Pilot Certifications

As of Dec. 31	Registered Civil Aircraft	Certified Airplane Pilots			
		Total	Airline Transport	Commercial	Private
1930	9,815	15,280	....	7,847	7,423
1931	10,630	17,739	....	8,513	9,226
1932	10,324	18,594	330	7,967	10,297
1933	9,284	13,960	554	7,635	5,771
1934	8,322	13,949	676	7,484	5,789
1935	9,072	14,805	736	7,362	6,707
1936	9,229	15,952	842	7,288	7,822
1937	10,836	17,681	1,064	6,411	10,206
1938	11,159	22,982	1,159	7,839	13,985
1939	12,772	33,706	1,197	11,677	20,832
1940	17,928	69,829	1,482	18,791	49,607
1941	26,013	129,947	1,587	34,578	93,782
1942	27,170	166,626	2,177	55,760	108,689
1943	27,180	173,206	2,315	63,940	106,951
1944	27,919	183,382	3,046	68,449	111,888
1945	27,789	296,695	5,816	162,873	128,207
1946	81,002	400,061	7,654	203,251	189,156
1947	94,821	433,241	7,059	181,913	244,270
1948	96,997	491,306	7,762	176,845	306,699
1949	92,622	525,174	9,025	187,769	328,380
1950	92,509	N.A.	N.A.	N.A.	N.A.
1951	88,545	580,574	10,813	197,900	371,861
1952	89,313	581,218	11,357	193,575	376,286
1953	91,102	585,974	12,757	195,363	377,854

N.A.—Not available.

Distribution of Aircraft Engaged in Business Flying, by Type of Business

For Continental United States, 1952. As reported by Civil Aeronautics Administration

Type of Business	NUMBER OF AIRCRAFT					
	Company-owned		Individually-owned		Total—Business	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Automotive (manufacturing, sales and service)	921	8.3	1,285	6.6	2,206	7.2
Aviation (manufacturing and fixed base operations)	2,678	24.1	2,301	11.9	4,979	16.3
Total	3,599	32.4	3,586	18.5	7,185	23.5
Manufacturing and mining (exclusive of aircraft, automobiles and petroleum)	2,396	21.6	1,231	6.3	3,627	11.9
Farming, ranching, fishing, forestry, farm implements and farm products	1,041	9.4	6,596	34.0	7,637	25.0
Petroleum (refining, distribution, sales and executive travel)	1,149	10.3	495	2.6	1,644	5.5
Construction and real estate	1,127	10.1	1,111	5.7	2,238	7.3
Services (business, repair, personal, entertainment, finance and insurance)	683	6.2	2,448	12.6	3,131	10.3
Professional and related services	184	1.7	2,408	12.4	2,592	8.5
Wholesale and retail trade (excl. aircraft, autos, petroleum, farm, forestry)	585	5.3	1,244	6.4	1,829	6.0
Communications, public utilities and transportation (other than air)	336	3.0	281	1.5	617	2.0
Total—Excluding Automotive and Aviation	7,501	67.6	15,814	81.5	23,315	76.5
Total—All Types	11,100	100.0	19,400	100.0	30,500	100.0

U. S. Civil Aircraft Registrations by States

As of January 1 of each year

As reported by Civil Aeronautics Administration

State	1954 Active	1954 Inactive	1954 Total	Total Aircraft 1953	1952	1951
Alabama	423	324	747	753	787	907
Arizona	691	571	1,262	1,164	1,094	1,156
Arkansas	647	446	1,093	1,080	1,119	1,213
California	5,782	4,587	10,369	10,067	9,845	10,298
Colorado	781	475	1,256	1,263	1,291	1,363
Connecticut	315	314	629	603	601	643
Delaware	133	77	210	275	283	302
Dist. of Columbia	391	176	567	554	553	548
Florida	1,224	1,462	2,686	2,612	2,546	2,556
Georgia	694	548	1,242	1,169	1,159	1,212
Idaho	611	259	870	906	905	917
Illinois	3,391	1,739	5,030	4,923	4,779	4,909
Indiana	1,664	1,093	2,757	2,679	2,675	2,753
Iowa	1,542	522	2,064	2,126	2,276	2,451
Kansas	1,653	850	2,503	2,477	2,462	2,797
Kentucky	411	293	704	655	673	799
Louisiana	749	535	1,284	1,159	1,105	1,145
Maine	518	209	727	550	583	632
Maryland	501	363	864	837	859	863
Massachusetts	876	555	1,431	1,435	1,402	1,412
Michigan	2,286	1,613	3,899	3,876	3,914	4,172
Minnesota	1,612	752	2,364	2,092	2,048	2,146
Mississippi	518	350	868	802	762	728
Missouri	1,441	609	2,050	1,924	1,893	2,116
Montana	803	376	1,179	1,165	1,111	1,113
Nebraska	1,208	555	1,763	1,799	1,799	1,863
Nevada	258	213	471	429	390	401
New Hampshire	126	89	215	221	225	278
New Jersey	1,080	851	1,931	1,926	1,767	1,772
New Mexico	461	311	772	754	708	769
New York	2,785	1,712	4,497	4,297	4,308	4,386
North Carolina	962	638	1,600	1,547	1,627	1,694
North Dakota	577	571	1,148	1,188	1,256	1,293
Ohio	2,568	1,741	4,309	4,157	4,187	4,267
Oklahoma	1,297	699	1,996	2,026	1,994	2,212
Oregon	1,112	648	1,760	1,747	1,747	1,802
Pennsylvania	2,452	1,458	3,910	3,925	4,006	4,104
Rhode Island	106	91	197	197	203	211
South Carolina	334	258	592	598	621	678
South Dakota	745	385	1,130	1,112	1,017	1,034
Tennessee	537	386	923	919	924	1,024
Texas	4,256	2,484	6,740	6,581	6,404	6,398
Utah	282	199	481	456	479	535
Vermont	105	53	158	163	153	168
Virginia	676	561	1,237	1,267	1,272	1,363
Washington	1,494	766	2,260	2,219	2,173	2,324
West Virginia	349	253	602	599	616	655
Wisconsin	1,282	685	1,967	1,995	2,006	2,098
Wyoming	352	154	506	509	517	532
Total	54,561	34,859	89,420	87,762	87,128	91,517

U. S. Civil Aircraft In Scheduled Air Transportation, January 1, 1955

Includes Aircraft in Domestic and International Service, Cargo and Helicopter Lines

As reported by Civil Aeronautics Administration

Operator	Boeing 377	Con. Vul. 240	Con. Vul. 340	CW C-46	Douglas DC-3	Douglas DC-4	Douglas DC-6	Douglas DC-7	Lockheed 749	Lockheed Other	Martin	All Other	Total
Aerovias S. A.	..	..	..	5	..	..	..	..	..	..	..	..	5
Alaska Airlines	..	..	..	1	3	2	..	..	..	..	..	..	6
Alaska Coastal	..	..	..	..	..	..	..	..	..	1	..	11	12
Allegheny Airlines	..	..	..	..	14	..	..	..	..	..	..	..	14
American Airlines	..	76	..	..	..	9	78	25	..	..	..	..	188
Bonanza Airlines	..	..	..	..	5	..	..	..	..	..	..	..	5
Braniff Airways	..	..	23	..	24	2	9	..	..	..	..	..	58
California Central	..	..	..	..	2	..	..	..	..	..	4	..	6
Capital Airlines	..	..	..	..	21	25	..	..	7	5	..	..	58
Caribbean Atlantic	..	..	..	..	3	..	..	..	..	..	..	..	3
Central Airlines	..	..	..	..	6	..	..	..	..	..	..	..	6
Colonial Airlines	..	..	..	..	8	5	..	..	..	..	..	..	13
Continental Airlines	..	..	6	..	9	..	2	..	..	..	..	..	17
Cordova Airlines	..	..	..	..	2	..	..	..	..	..	..	..	2
Delta Airlines	..	..	20	..	16	..	7	7	..	3	..	..	53
Eastern Airlines	..	..	..	..	..	11	..	..	19	29	60	..	119
Ellis Airlines	..	..	..	..	..	..	..	..	..	..	..	7	7
Flying Tiger Line	..	..	..	23	..	7	2	..	..	..	..	..	34
Friedkin Aeronautics	..	..	..	..	4	..	..	..	..	..	..	..	4
Frontier Airlines	..	..	..	..	12	..	..	..	..	..	..	..	12
Hawaiian Airlines	..	..	5	..	10	..	..	..	..	..	..	..	15
Helicopter Air Service	..	..	..	..	..	..	..	..	..	..	..	6	6
Lake Central Airlines	..	..	..	..	7	..	..	..	..	..	..	..	7
Los Angeles Airways	..	..	..	..	..	..	..	..	..	..	..	7	7
Mackey Air Transport	..	..	..	..	4	..	..	..	..	..	..	..	4
Midet Aviation Corp.	..	..	..	..	1	..	..	..	..	..	..	..	1
Mohawk Airlines	..	..	..	..	10	..	..	..	..	..	..	1	11
National Airlines	..	..	12	..	..	..	12	4	..	11	..	1	40
New York Airways	..	..	..	..	..	..	..	..	..	..	..	5	5
North Central Airlines	..	..	..	..	18	..	..	..	..	..	..	..	18
Northeast Airlines	..	7	..	..	12	..	..	..	..	..	..	..	19
Northern Consolidated	..	..	..	..	3	..	..	..	..	..	..	1	4
Northwest Airlines	10	..	..	..	9	19	5	..	..	..	..	..	43
Ozark Airlines	..	..	..	..	12	..	..	..	..	..	..	..	12
Pacific Northern	..	..	..	..	4	4	..	..	..	..	..	..	8
Pan American Grace	..	..	..	..	6	3	13	..	..	..	..	..	22
Pan American World	27	10	..	..	9	24	49	..	..	9	..	..	131
Piedmont Aviation	..	..	..	..	15	..	..	..	..	..	..	..	15
Pioneer Airlines	..	..	..	..	11	..	..	..	..	..	9	..	20
Reeve Aleutian	..	..	..	..	3	..	..	..	..	..	..	1	4
Resort Airlines	..	..	..	6	..	2	..	..	..	..	..	..	8
Riddle Airlines	..	..	..	8	..	..	..	..	..	..	..	..	8
Slick Airways	..	..	..	13	..	..	2	..	..	..	..	..	15
Southern Airways	..	..	..	..	10	..	..	..	..	..	..	..	10
Southwest Airways	..	..	..	..	10	..	..	..	..	..	4	..	14
Texas Central Airlines	..	..	..	..	2	..	..	..	..	..	..	..	2
Trans-Pacific	..	..	..	..	6	..	..	..	..	..	..	..	6
Trans-Texas Airways	..	..	..	..	16	..	..	..	..	..	..	..	16
Trans World Airlines	..	..	..	..	..	12	..	..	36	42	52	..	142
United Airlines	1	..	55	..	13	20	64	25	..	..	..	..	163
West Coast Airlines	..	..	..	..	12	..	..	..	..	..	..	..	12
Western Airlines	..	9	..	..	9	6	8	..	..	..	..	..	32
Wien Alaska	..	..	..	2	3	..	..	..	..	..	..	..	5
Total	38	102	121	60	347	155	251	61	62	100	129	49	1,468

Con. Vul.—Consolidated Vultee. CW—Curtiss Wright. Martin—202 and 404 models. DC-4—Includes DC6, DC6A, DC6B.

Scheduled Air Carrier Operation Statistics

As reported by the Civil Aeronautics Board

Number of Operators, Aircraft in Service, Route Mileage

Year As of Dec. 31	DOMESTIC LINES Operators	Aircraft in Service	Avg. Number Seats	Route Milage operated	Avg. Speed (mph)	INTERNATIONAL LINES Operators	Aircraft in Service	Route Milage	Avg. Speed (mph)
1938	16	260	13.91	34,879	....	2	73	34,968	....
1939	18	276	14.66	36,654	....	2	84	42,455	....
1940	19	369	16.54	42,757	....	3	68	52,322	....
1941	19	370	17.54	45,163	....	3	83	N.A.	....
1942	19	186	17.91	41,596	....	3	68	N. A.	....
1943	19	204	18.34	42,537	....	3	70	27,211	....
1944	19	238	19.05	47,384	155.6	3	70	29,706	149.2
1945	20	421	19.68	48,516	155.4	4	97	38,385	150.7
1946	24	674	25.25	53,981	160.0	9	147	66,419	166.2
1947	28	810	29.92	62,215	168.2	12	154	95,803	191.1
1948	31	878	32.37	68,702	171.9	13	175	105,863	196.5
1949	37	913	35.02	72,667	179.0	12	177	109,011	207.1
1950	38	960	37.47	77,440	181.2	12	160	106,401	218.4
1951	38	981	39.55	78,913	184.6	12	140	108,763	223.5
1952	35	1,078	42.71	77,894	196.8	13	149	110,465	226.8
1953	32	1,139	46.07	78,354	197.8	14	161	111,826	229.9

Fuel Consumed by Domestic Scheduled Air Carriers

Year	Gasoline (gal.)	Oil (gal.)
1938	37,722,669	454,277
1939	47,196,559	726,221
1940	65,674,895	1,104,359
1941	81,667,020	1,382,064
1942	65,906,271	1,008,371
1943	65,026,412	894,262
1944	89,513,646	1,266,741
1945	124,824,130	1,709,566
1946	226,288,751	2,876,250
1947	294,196,130	3,733,728
1948	332,422,626	4,250,151
1949	375,283,794	4,702,751
1950	413,441,972	5,003,531
1951	491,483,855	5,546,947
1952	588,323,361	6,937,330
1953	691,903,326	7,975,098

Scheduled Air Carrier Operating Revenues—Domestic Lines

Year	Total Revenues	Passenger Dollars	% of Total	Mail Dollars	% of Total	Express & Freight Dollars	% of Total	Excess Baggage Dollars	% of Total	Other Dollars	% of Total
1938	$ 42,920,682	$ 24,860,594	57.9	$15,873,951	37.0	$ 1,278,164	3.0	$ 282,474	0.7	$ 624,502	1.4
1939	55,947,764	34,843,711	62.3	18,482,476	33.0	1,619,132	2.9	345,664	0.6	656,782	1.2
1940	76,365,642	53,308,172	69.4	20,090,123	26.1	2,077,726	2.7	551,249	0.7	836,372	1.1
1941	97,311,134	69,791,328	71.7	22,696,351	23.3	2,919,001	3.0	765,424	0.8	1,139,018	1.2
1942	108,248,830	74,819,920	69.1	22,470,028	21.7	6,977,943	6.4	1,259,774	1.2	1,721,975	1.6
1943	123,104,965	87,481,456	71.0	24,212,580	19.7	8,381,539	6.8	1,720,142	1.4	1,309,248	1.1
1944	160,928,192	116,440,690	72.3	33,217,366	20.7	8,306,288	5.2	2,030,444	1.2	932,404	0.5
1945	214,743,090	166,519,922	77.5	33,693,467	15.7	10,836,138	5.0	2,398,241	1.1	1,296,322	0.7
1946	316,232,793	275,593,712	87.2	20,981,543	6.6	13,630,295	4.3	2,992,795	0.9	3,044,449	1.0
1947	364,839,575	308,575,954	84.6	29,444,746	8.1	19,377,949	5.3	3,672,104	1.0	3,868,822	1.0
1948	424,295,283	343,259,730	79.0	59,369,343	13.7	24,372,395	5.6	3,953,310	0.9	3,370,605	0.8
1949	436,033,845	388,930,412	89.0	59,332,991	13.2	27,986,886	5.8	4,452,334	0.9	5,331,220	1.1
1950	557,162,340	443,852,000	79.7	63,772,223	11.4	35,109,399	6.3	5,068,238	0.9	9,360,481	1.1
1951	702,364,506	591,186,365	84.2	57,421,687	8.2	36,914,107	5.2	6,069,313	0.9	10,773,018	1.5
1952	817,650,000	695,456,000	85.1	58,887,000	7.2	42,825,000	5.2	7,348,000	0.9	13,152,000	1.6
1953	937,482,000	803,569,000	85.8	64,484,000	6.9	47,791,000	5.1	8,704,000	0.9	12,622,000	1.3

Personnel Employed—Domestic Scheduled Air Carriers

Year	Pilots and Copilots	Other Flight Personnel	Pursers, Stewards, Stewardesses	Dispatchers Meterologists	Mechanics	Hangar and Field Personnel	Office Employees	All Others	Total Employees
1938	1,125	....	358	186	2,430	712	2,715	472	9,008
1939	1,412	....	536	191	2,822	877	4,582	228	10,639
1940	1,939	12	914	192	4,054	1,220	5,855	1,131	16,984
1941	2,217	19	1,028	220	4,423	2,224	7,807	1,285	19,223
1942	2,194	112	763	1,581	9,345	2,969	7,717	2,236	26,910
1943	2,125	8	845	1,685	8,271	3,356	10,973	2,291	29,654
1944	2,879	11	1,322	1,870	7,136	3,509	12,201	2,270	31,198
1945	4,967	108	2,075	2,613	10,844	7,612	19,241	3,453	50,313
1946	5,712	93	3,342	3,577	16,107	10,307	24,626	5,413	69,182
1947	6,034	181	3,061	2,618	13,266	8,409	22,013	2,317	58,998
1948	5,307	312	3,038	2,612	16,428	9,222	21,396	3,101	60,416
1949	5,257	642	3,199	3,497	15,674	9,336	21,126	3,145	59,886
1950	5,785	776	3,372	3,450	15,788	9,822	21,894	3,016	61,903
1951	6,488	1,012	4,106	3,617	18,908	11,475	25,770	3,322	73,898
1952	7,209	1,141	4,640	2,666	20,973	12,388	27,939	3,731	79,687
1953	7,726	1,365	4,954	2,665	20,717	14,249	30,193	2,782	84,651

Fuel Consumed by International Scheduled Air Carriers

Year	Gasoline (gal.)	Oil (gal.)
1937	7,462,111	207,186
1938	7,587,522	176,492
1939	8,740,576	184,976
1940	8,860,694	182,518
1941	11,302,376	276,464
1942	16,811,969	329,154
1943	12,760,364	242,577
1944	15,648,426	242,836
1945	25,986,866	315,930
1946	69,543,323	767,569
1947	103,723,690	1,334,810
1948	122,402,583	1,396,953
1949	142,813,987	1,662,727
1950	163,804,235	1,865,943
1951	165,919,489	1,741,478
1952	182,106,394	1,921,121
1953	188,735,596	2,091,553

Personnel, Payroll and Average Salary—1953*

Type of Employee	DOMESTIC LINES Personnel	Annual Payroll	Av. Annual Salary	INTERNATIONAL LINES Personnel	Annual Payroll	Avg. Annual Salary
Pilots and Copilots	7,726	$82,627,324	$10,695	1,711	$21,570,845	$12,607
Other Flight Personnel	2,365	10,513,217	7,702	781	7,294,589	9,340
Stewards, Stewardesses, Pursers	4,954	15,336,134	3,095	1,152	4,401,600	3,821
Dispatchers, Comm. Operators, Meteorologists	2,665	12,654,792	4,750	902	3,619,559	4,011
Mechanics	20,716	102,915,028	4,968	5,288	22,740,422	4,466
Other Hangar and Field Personnel	14,249	58,395,463	4,098	3,104	9,523,184	3,068
Office Employees	30,192	118,938,098	3,939	10,126	35,807,857	3,536
All Others	2,782	10,681,203	3,839	1,576	5,138,950	3,260
Total	84,650	$412,061,339	$4,868	26,740	$111,097,306	$4,490

*Excludes certificated All-Cargo Air Carriers.

1955 U.S. AND FOREIGN MILITARY AIRCRAFT

MAKE AND MODEL	POPULAR NAME	Type	Number of Crew	ENGINE: Make and Model	ENGINE: Number Used	ENGINE: Total Take-off Hp. at Specified RPM	ENGINE: Total Take-off Thrust at Specified RPM	Fuel Capacity (Gallons)	Oil Capacity (Gallons)	DIMENSIONS (Ft. & In.): Span	DIMENSIONS (Ft. & In.): Overall Length	DIMENSIONS (Ft. & In.): Height (Tail Position)	DIMENSIONS (Ft. & In.): Wing Area (Gross) Sq. Ft.	DIMENSIONS (Ft. & In.): Aileron Area (Sq. Ft.)	WEIGHTS (Lb.): Empty	WEIGHTS (Lb.): Useful Load	WEIGHTS (Lb.): Gross	WEIGHTS (Lb.): Pay Load	PERFORMANCE: Maximum Speed at Altitude	PERFORMANCE: Cruising Speed at Altitude	PERFORMANCE: Range in Miles at Cruising Speed	PERFORMANCE: Initial Climb (Feet per Minute)	PERFORMANCE: Service Ceiling with Normal Load (Feet)
UNITED STATES																							
Beech 45	Mentor	T	2	Cont O-470-13	1	225-2600	None	80	3	32'10"	25'11"	9'7"	177.6	11.5	2170	730	2900		189-SL	173-10000	735	1230	20000
Boeing KC-97G	Stratofreighter	TC,Ta,Am	5	P&W R-4360-59	4	14000	None	9190		141'3"	110'4"	38'3"			76000	98000	175000	55400	375	300*	4300*		35000*
B-47E	Stratojet	MB	3	GE J-47	6	None	36000			116'0"	107'0"	29'0"					200000	20000*	600*		4000*		40000*
B-50D	Superfortress	MB	11	P&W R-4360-35	4	14000	None			141'3"	99'0"	32'9"					170000	28000	400*	300*	4000*		40000
B-52	Stratofortress	HB	5	P&W J-57	8	None	80000			185'0"	156'0"	48'0"					350000*		600*				40000*
RB-47E	Stratojet	PRB	3	GE J-47	6	None	36000*			116'0"	109'10"	28'0"					200000		600*		4000*		40000*
707	Stratotanker	TT	2-3	P&W JT-3	4	None	40000			130'0"	128'0"	38'3"					190000		550*	550	3000*		42000*
Cessna L-19A	Bird Dog	OR	1	Cont O-470-11	1	213-2600	None	42	2½	36'0"	25'0"	7'6"	174.0	16.3	1498	602	2100	465	119-SL	104-5000	530	1290	21200
Chance Vought F7U-3	Cutlass	F	1	Westl J-46	2	None				39'0¼"	44'3½"	147'4"	540.0	74.4					650*			1390*	43000
A2U		A	1																				
Convair R3Y		Tr	7	All XT-40-A-10	4	22000				145'9"	139'8"	81'5"					160000		350*				
XF-92A	Convair Delta	I	1	All J-33-A-29	1	None				31'3"	42'5"	17'8"	425.0				15000						45000*
F-102		I	1	P&W J-57		None																	
C-131A	Samaritan	Tr	2	P&W R-2800-99W	2	5000-2800	None	1530	62	91'9"	74'8"	27'3"	817.0	49.0	26255	16320	43575		279	248	1090	1410	24500
C-131C		FTB	3	All YT-56-A-3	2	1500-13820	None	1730	15	106'4"	79'2"	29'2"	920.0	43.8	25556	21444	47000		338-28000	318-25000	1710		35300
T-29C	Flying Classroom	T	3	P&W R-2800-99W	2	5000-2800	None	1530	62	91'9"	74'8"	27'3"	817.0	49.0	30655	13385	43575		302-15200	248-20000		1385	24900
T-29D	Flying Classroom	T	3	P&W R-2800-99W	2	5000-2800	None	1530	62	91'9"	74'8"	27'3"	817.0	49.0	31190	12150	43575		301-14800	248-20000		1370	24300
XF2Y-1	Sea Dart	F	1	Westl J-46	2	None				34'0"	52'0"	12'0"											
C-131B		FL	2	P&W R-2800-103-W	2	3500	None	1730	60	106'4"	79'2"	29'2"	920.0	43.8			47000		314-14900	284-20000	1880	1290	
XFV-1	Pogo Stick	F	1	All YT40-14	1	5850													503*				
B-58		B																					
Douglas C-124C	Globemaster II	TC	5	P&W R-4360-63	4	14000-2700	None	11600	330	173'3"	127'1"	48'3"	2510.0	132.4	101340	78006	185000	56000			6030		
AD	Skyraider	A	1-2-3	Wr R-3350-26W	1	2700	None			50'0"	38'10"	15'7"	400.0		10519	8548	19065						
F4D	Skyray	F	1	P&W J-57		None																	
C-118A	Liftmaster	Tr	5	P&W R-2800-52W	4	10000-2800	None	5406	166	117'6"	105'7"	28'9"	1463.0	85.1	54675	48125	103000	36325	368-19700	315-22400	4010	1080	26000
A4D	Skyhawk	AB	1	Wr J-65	1	None																	
B-66		B	3	All J-71	2	None				72'6"	75'2"	23'7"					70000		600*				
RB-66		RB	3	All J-71	2	None				72'6"	75'2"	23'7"					70000		600*				
Fairchild C-82	Flying Boxcar	TC	6	P&W R-2800-85	2	4200-2800	None	2800		106'6"	77'1"	25'5"			31288		94000	17900					
C-119C	Flying Boxcar	TC	6	P&W R-4360-20W	2	7000-2700	None	2624	120	109'3"	86'6"	26'3"	1477.0	110.8	38942		73150	27500	290	220-10000	2010	1760	
C-119F	Flying Boxcar	TC	6	Wr R-3350-30WA	2	7000-2800	None	2624	120	109'3"	86'6"	26'3"	1477.0	110.8	38920	34000	77000	29400	282-10000	205-10000	2080	1150	20600
C-119G	Flying Boxcar	TC	6	Wr R-3350-85	2	7000-2800	None	2624	120	109'3"	86'6"	26'3"	1477.0	110.8	38920	34000	77000	29400	280-10000	205-10000	2080	1200	20600
C-119H	Flying Van	TC	6	Wr R-3350-85	2	7000-2800	None	2624	150	148'0"	95'8"	32'0"	2030.0		46455		85900	34000	264	190-10000	2250	1450	
XC-120	Pack Plane	Tr	5	P&W R-4360	2	7000-2700	None	2798	120	109'3"	83'0"	24'10"	1477.0		36288		70700	20500		167-10000	2700	1790	
C-123B	Avitruc	Tr	2	P&W R-2800-99W	2	3000		1614	96	110'0"	76'0"	34'0"	1223.2		31050	27750	60000	18900	252-13000	180-5000		1400	23000
Grumman SA-16A	Albatross	H,R,C,Tr,P	6	Wr R-1820-76A	2	2850-2700	None	675	56	80'0"	61'0"	24'3"	833.0		20100		27025		270-18800	225	2700	1400	
F9F-8	Cougar	F	1	P&W J-48	1	None				34'6"	41'7"	12'3"							650*				
S2F-1	Sub Killer	Sub,A	4	Wr R-1820	2	2750	None																
F9F-9	Tiger	F	1	Wr J-65-W-7	1	None				31'7"	40'10"	12'8"											
Lockheed T-33		T		All J-33	1	None				39'0"	38'0"	12'0"	238.0				12200		600*				
R7V-1	Super Constellation	TC			4					123'0"	113'7"	23'0"	1650.0										
RC-121D, WV-2	Super Constellation	Re			4					123'0"	116'2"	27'0"	1650.0										
C-130		Tr			4					132'0"	95'0"	38'0"											
P2V-7	Neptune	PL,S,M,TB		(a)	4		7000			103'0"	91'5"	29'4"	1000.0*		47450*		75500		300				22000
R7V-2	Super Constellation	POL		P&W T-34	4	22000		6750*		117'0"	116'2"	24'8"	1615.0	99.6			150000	36000		440			25000
F-104		F																					
XFV-1		F		All	1																		
Martin P5M-1	Martin	AS	7	Wr 3350	2	6500	None			118'0"	94'0"	37'3"	1406.0				70000*						

	P5M-2	Martin	AS	7	Wr	R-3350-32W	2	6500*	None				118'0"	98'11"	31'7"	1406.0				70000*			650*			2000*		35000*
	B-61	Matador	PB		All	J-33	1	None					28'7"	39'6"															
	B-57A		NI	2	Wr	J-65	2	None	14400				64'0"	65'5"	15'7"	960.0				50000*			500*			2000*		45000*
McDonnell	F3H-1N	Demon	NF	1	West	J-40	1	None					38'4"	59'0"	14'6"														
	F-101A	Voodoo	F	1	P&W	J-57	2	None																					
	RF-101A	Voodoo	RF	1																									
	F3H-2N	Demon	NF	1	All	J-71	1	None																					
North American	F-86D	Sabre	I	1	GE	J-47	1	None	5200*				37'1"	41'8"	15'0"					18000			650*			500		
	F-86F	Sabre	F	1	GE	J-47	1	None	5600				37'0"	37'0"	14'9"					14000			550*			600*		45000*
	F-86H	Sabre	FB	1	GE	J-73	1	None					37'0"	39'0"	15'0"								550*			600*		45000*
	F-100	Super Sabre	F	1	P&W	J-57-P7	1	None					38'0"	45'0"	14'0"											500*		30000*
	T-28B		T	2	Wr	R-1820	1	1425	None				40'0"	32'0"	12'0"				6000	8000		346		310-30000	1000		38500
	F-86K	Sabre	F	1	GE	J-47-33	1	None	5800*				37'1"	42'4"	15'0"					18500			650*					45000*
	FJ-3	Fury	F	1	Wr	J-65	1	None	7200				37'1"	37'7"	13'8"					18000*			650*					45000*
	FJ-4	Fury	F	1	Wr	J-65-W4	1	None	7800				39'1"	37'6"	12'8"					19000*			650*					46000*
Northrop	F-89D	Scorpion	I	2	All	J-35A-35	2	None					56'2"	53'4"	17'7"	606.0				40000*			600*			1000*		46000*
	SB-62	Snark	PB																										
Republic	F-84F	Thunderstreak	FB	1	Wr	J-65	1	None	7200				33'6"	43'4"	14'4"					25000			650*			1000*		45000*
	RF-84F	Thunderflash	RF	1	Wr	J-65	1	None	7200				33'6"	47'6"	15'0"								650*			1000*		45000*
	YF-84J		FB	1		J-73	1	None					33'7"	43'0"	14'4"								650*			1000*		
Temco	33	Plebe	T	2	Cont	O-470-13	1	225-2600	None	50	3		31'2½"	24'3"	9'10"	154.0	9.6	1800	700	2500	None	192-SL	178-SL		535	1380	29000
AUSTRALIA																													
de Havilland	DH-115, MK-33	Vampire Trainer	T	2	DH	Goblin 35	1	None	3350		396							11030				549-20000			940	4500	40000
BELGIUM																													
S.A.B.C.A.	*F. Mk. 4	Hunter	F	1	RR	Avons	1	None					33'8½"	46'10½"	13'1½"	340.0													
GREAT BRITAIN																													
Armstrong-Whitworth																													
	NF-11, 13	Meteor	NF	2	RR	Derwent	2	None					43'0"	40'0"	13'0"	374.0	26.7												
	NF-12, 14	Meteor	NF	2	RR	Derwent	2	None					43'0"	40'11"	13'0"	374.0	26.7												
Auster	T-MK-7		T	3	DH	Gypsy Major MK-7	1	145-2550	None	29	3½		36'0"	23'4"	8'8"	184.5	18.0	1530	680	2210		122-1000	107-1000		375	900	12000
	B4	Ambulance/Freight	TC,A	1	BI	702	1	180-2600	None	27½	3		37'0"	24'8"	8'4½"	189.5	9.3	1642	680	2600		121-1000	105-1000		300	720	
	A.O.P. MK-9		OL	2-3	BI	Bombardier	1	180-	None	18	3		30'5"	23'8½"	8'11"	187.0				2100		127-	110-		245		
		Aiglet	T	2	DH	Gypsy Major	1	130-	None				32'0"	23'2½"						2200		132-					
A. V. Roe	MR-2	Avro Shackleton	RB	10	RR	Griffon	4	9000-	None				120'0"	67'4"	18'9½"														
	707-B	Avro Delta		1	RR	Derwent	1	None					33'0"	42'4"	12'0"			10000											
	707-A			1	RR	Derwent	1	None					34'2"	42'4"	11'7"														
	698	Vulcan B1	B		Br	Olympus	4	None					99'0"	97'1"	25'8"														
	707-C	707-C	Rs	2	RR	Derwent	1	None					34'2"	42'4"	11'7"														
	MR-3	Avro Shackleton	RB		RR	Griffon	4		None																				
Blackburn		Beverley	Tr	4	Br	Centaurus 173	4		None				162'0"	99'5"	36'9"	2916.0	188.0												
Boulton Paul	P-108A	Ballist T-2	T	2	RR	Merlin 35	1	1280-3000	None	125	7½		39'4"	35'1"	12'6"	250.0	15.2	6731	1679	8410		290-9000	265-8000		670	1790	32900
	P-108B	Sea Ballist T-21	T	2	RR	Merlin 35	1	1280-3000	None	122	7½		39'4"	35'1"	11'9"	250.0	15.2	7225	1725	8950		275-9000	250-8000		680	1650	31000
Bristol	170	Mk. 31 Freighter	Tr		Br	Hercules 730	2	3960-	None	2083	80		108'9"	68'4"	21'6"	1497.0	84.3	27700	15167	44000	12997	193-10000	164-5000		2000	1390	22500
	171	Sycamore	H	1	Av	Leonides	1	520-	None	89	6		48'6½"	61'0"	14'7"			3963	1417	5200		141-	99-		368	1300	15500
	173		H		Av	Leonides 73	2	1100-	None				48'6½"	78'2"						10660		156-SL					
de Havilland	DH-110	Vampire Trainer	T	2	DH	Goblin 35	1	None	3500-10750	350	1½		38'0"	34'9"	8'3"	282.0	7.7			11150		549-28000	325-30000		850	4800	40000
	DH-112	Venom MK 4	F	2	DH	Ghost	1	None	5000-10250				41'9"	31'10"	8'3"														
	DH-110		NF	2	RR	Avons	2	None					51'9"	52'1½"															
	DHC-1	Chipmunk MK 20	T	2	DH	Gypsy Major 8	1	145-2280	None	21	3		34'4"	25'6"	7'9"	172.5	13.9	1425		2100		136-SL	119-SL		275	840	19000
	DH-112	Venom, Sea Venom	NF	2	DH	Ghost	1	None	5000-10250				41'9"	35'3"															
English Electric	B-2	Canberra	MB	3	RR	Avons	2	None	13000-7800				64'0"	65'8"	15'7"														
	B-6	Canberra	B	3	RR	Avons	2	None	13000-7800				64'0"	65'9"	15'7"														
	B-8	Canberra	AB	2	RR	Avons	2	None	13000-7800				64'0"	65'9"	15'7"														
	PR-3, PR-7	Canberra	P	2	RR	Avons	2	None	13000-7800				64'0"	66'8"	15'7"														
	T-4	Canberra	T	3	RR	Avons	2	None	13000-7800				64'0"	65'6"	15'7"														
	P-1		F	1	ArS	Sapphire	2	None																					
Fairey	T-7, AS-7	Firefly	AS,T	3	RR	Griffon 8901	1	1965-	None				44'9"	38'3"		342.5		11016		13870				267-13500	860	1680	25000
	FD-1		Rs		RR	Derwent	1	None					19'6½"	26'3"															
	AS-1	Gannet	AS	3	ArS	Double Mamba 100	1	None	2930-				54'4"	43'9"								300*							
	5	Firefly	AS,R	2	RR	Griffon 74	1	2020-	None				41'2"	37'11"		330.0		9948		13027		385-14000			780		33500
		Gyrodyne		2	Av	Leonides	2	1100-	None																				
		Reledyne	H		Nap	Eland	2	None																					

For abbreviations see page 221

For Directory of the Aircraft Manufacturers listed above, see page 263

U. S. AND FOREIGN MILITARY AIRCRAFT—*concluded*

MAKE AND MODEL	POPULAR NAME	Type	Number of Crew	ENGINE: Make and Model	Number Used	Total Take-off Hp. at Specified RPM	Total Take-off Thrust at Specified RPM	Fuel Capacity (Gallons)	Oil Capacity (Gallons)	DIMENSIONS (Ft. & In.): Span	Overall Length	Height (Taxi Position)	Wing Area (Gross) Sq. Ft.	Aileron Area (Sq. Ft.)	WEIGHTS (Lb.): Empty	Useful Load	Gross	Pay Load	PERFORMANCE: Maximum Speed at Altitude	Cruising Speed at Altitude	Range in Miles at Cruising Speed	Initial Climb (Feet per Minute)	Service Ceiling with Normal Load (Feet)
Folland	Gnat	F	1	Br Orpheus	1	None				29'8"	28'9"	8'9"											50000*
Gloster GA-5	Javelin	F	2	ArS Sapphire	2	None	16000			52'0"	57'0"	17'0"											
Handley Page HP-80	Victor	B		ArS Sapphire	4	None				110'0"	114'11"	26'9"											
Hawker	Sea Hawk	I		RR None 4	1	None	5000-10500			39'0"	46'0"	8'9"	278.0										
	Hunter F. Mk. 1,4	F	1	RR Avons	1	None				33'8½"	45'10½"	13'1½"	340.0										
	Hunter F. Mk. 2	F	1	ArS Sapphire	1	None				33'8½"	45'10½"	13'1½"	340.0										
Hunting Percival T. Mk. 1	Provost	T	2	Av Leonides	1	550-3000	None	65	6	35'2"	28'0"	8'10"	214.0	24.2	3311	989	4300		201-2300	177-11500	633	2180	22500
P-66	Pembroke	Tr	2	Av Leonides	2	1100-3000	None	238	25	64'6"	46'0"	16'1"	400.0	50.2			13000		220-1900	209	1100	1800	22000
P-84	Jet Provost	T	2	ArS Viper V-8	1	None	1640-13400	205		35'5"	31'11"	12'8"											
Scottish Aviation	Twin Pioneer	Tr	1	Av Leonides 503/8	2	1100-3000	None	192	10¼	76'9"	45'1"	11'7"	670.0	44.0	9075	4425	13500	3000	180-1750	139-5000	565	880	23000
	Pioneer 2	Tr		Av Leonides	1	550-3000	None	72	4½	52'6"	34'4"	10'1"	390.0	32.5			5400		173				
Short SB-6	Seamew	AS	2	ArS Mamba	1	None				55'0"	41'0"	13'5"											
Vickers-Armstrong MK-B-1	Valiant	MB		RR Avons	4	None																	
MK-F-4	Supermarine Swift	F	1	RR Avons	1	None				32'4"	41'6"	12'3"	320.2						650*-				
	Supermarine 525	F	1	RR Avons	2	None																	
V-1000		Tr		RR Conway	4	None				140'0"	146'0"	38'0"											
Westland MK-4	Wyvern	F	1	ArS Python	1	None	3650			44'0"	42'3"	15'9"											
S-51	Dragonfly	H		Av Leonides	1	550	None			48'0"	57'0"						5700		103				
S-55		H		Av Leonides Major	1	800	None			53'0"	41'8½"						8000		110				
CANADA																							
de Havilland L-20A	Beaver	L	1	P&W R-985-AN6B	1	450-2300	None	90*	8¼	48'0"	30'3"	9'0"	250.0	24.6	2980	2140	5100	1722	163-5000	140-5000	948*	1020	18000
2	Beaver	Tr	1	Av Leonides	1	520	None			48'0"	30'3"					2140		1722		147			
DENMARK																							
Skandinaviak Aero KZ-10-AOP		OL	2	Cont C-145-2	1		None	39½	7	30'10"	21'4"	6'11"	158.0	9.8	1156		1804		116	100	460	700	12500
FINLAND																							
Valmet Oy VH-11	Vihuriil	T	2	Br Mercury 8	1	720-2600	None	168	10	34'1"	29'0"	11'10"	204.5	15.7	4700		8630		270-12000	204-3300	680	1910	20200
FRANCE																							
Breguet 8-960	Vultur	FB	3	(b)	2	1350	8005	463		54'0"	43'9"	17'6"	387.7		12930		21700		589	248	1815		42700
1001		I																					
Dassault MD-450	Ouragan	I	1	HS None	1	None	5000	397		48'4"	42'2"	16'2"	255.8		9131		13602		584	466		8970	51100
	Mystere IIC	I	1	Sn Artar 101D	1	None	6600			45'8"	46'9"	16'0"			11515		15442		650	529		10150	58000
	Mystere IVA	I		HS Verdon	1	None	6700			43'8"	50'9"	17'4"			12516		16314		746	597		10620	64900
	Mystere IVB	NF	2	HS Avon	1	None																	
MD-XXB, XXN, 580																							
MD-315	Flamant	L		Sn 12-S	2	1060	None			61'4"	49'1"	17'8"	485.0		9370		12787		236	186	746	1180	31500
Fouga CM-170-R	Magister	FT	2	Cont Marboro 11	2	None	1760			44'5"	39'4"	11'0"	177.3		4258	1984	6173		453	403	745	4010	41300
Holste MH-1521	Broussard	TC	1	P&W R985	1	450	None			54'0"	33'10"	11'0"	270.0		3190		5401		170	137	750	1410	37200
Hurel-Dubois HD-45		I																					
Morane-Saulnier MS-472	Vanneau II	T	2	GnR 14M	1	640-2800	None	150	11	35'0"	29'3"	11'10"	186.0	16.2	4500	1300	5800		270-15000	200-12000	1060	1300	29000
MS-733	Alcyon	T	3	Pot 6D-02-A	1	240-2350	None	65	3¾	37'0"	31'1¼"	11'4"	235.0	21.8	2810	990	3800		162-SL	130-3300	870	730	18000
MS-734		L	1	Salm 9-AS-02	1	250-2000	None	92	3¾	37'0"	31'1¼"	11'4"	235.0	21.8	2800	1390	4190	620	157-SL	129-3300	795	800	11500
MS-735		T	3	Pot 6-D-30	1	310-2400	None	65	3¾	37'0"	31'1¼"	11'4"	235.0	21.8	2940	1005	3845		175-8900	152-8600	800	830	19000
MS-755	Fleuret	T	2	Cont Marboro 11	2	None	1764-22600	180	5½	31'4"	31'10"	9'0"	194.0	24.8	4300	1650	5950		440-19700	285-23000	470	3350	38000
MS-760	Paris	L,T	1	Cont Marboro 11	2	None	1760-22600	360	5½	31'4"	32'11"	9'0"	194.0	21.0	4190	3210	4190		405-20000	345-23000	800	2300	34000
MS-475		T	2	HS	1	880	None			41'11"	39'6"	14'2"			5181		6880		310	260	600	2120	33400

Potez	HP-75		A	2	Pot	6D32	1	480–	None			51'0"	36'0"	10'7"			2960		5291		170–	140–	435	1890	
S.I.P.A.	S-300		T	2	Cent	Palas	1	None	353–34000	58	1½	31'0"	26'5"	10'0"	105.0	7.0	1155	785	1940		224–SL	194–SL	435	1335	19800
	S-121		T†	2	Sn	125	1	580–	None			43'4"	36'7"	9'6"			4107		5126		223–	199–		1770	31500
	S-200	Minijet	T	2	Cent	Palas	1	None	353–			31'4"	20'1"	7'0"	106.0		1063		1808		248–	117–	340	1000	31500
S.N.C.A.N.	Nord-2501	Noratlas	Tr	3	Sn	Hercules	2	4080–	None	1345	73¼	106'7"	71'9"	20'9"	1085.0	42.2	26000	16350	40000	11700	275–10800	210–29500	1550	1420	25000
	NC-856	Norvigie	AO	1-2	Reg		1	140–	None	28	7½	47'4"	30'4"	8'8"	181.0	17.3	1433	860	1984	710	118–	105–	1243	1181	19500
	Nord-1750		H		Cont	Artouste	1					41'8"	35'3½"	9'10½"	280.0						585–				
S.N.C.A.S.E.		Aquilon	F	1-2	DH	Ghost	1	None	4850–			32'10"	44'3"	11'10"	272.0		9950		15298		712–SL			10500	51000
	SE-5000	Baroudeur	A	1	Sn	Atar 101-E	1	None	7280–			38'0"	34'4"	9'8"			1730	1440	2540		81–	65–	181	740	9900
	SE-3120	Alouette I	H	1	Salm	9NH	1	203–2150	None	31¼	3	32'9½"	31'9½"	9'11"			2040	940	2980		112–SL	106–	250	1180	13500
	SE-3130	Alouette II	H	1	Cont	Artouste II	1	360–3300	None			53'0"	42'0"	13'11"			4795	2080	6835		105–SL	90–	490	845	11950
	S-55	Elephant Joyeux	H	2	P&W	R-1340	1	600–2250	None	185																
		Durandal	I																							
S.N.C.A.S.O.	SO-4050	Vautour	A,F,B	1-2	Sn	Atar 101-E	2	None									685	865	1550	660	80–	37–	145	300	12000
	SO-1221	Djinn	H	1	Cont	Potouste	1	None	530–	68		39'4"	17'9"	8'7"												

ITALY

Aer Macchi	MB-323		T	2	P&W	R-1340	1	610–2290	None	106	9¼	39'4½"	30'0"	13'3"	217.0	23.0	4409	1301	5710		219–8800	173–13100	1180	1437	21325
Ambrosini	S-7		T	1-2	AR	115	1	225–	None	42		28'0"	26'10"		136.8		2238	794	3031		217–	193–	621		17060
	S-7		T	1-2	DH	Gypsy Queen 30	1	250–	None	53		28'0"	26'11"		136.8		2238	794	3031		230–	205–	621		16701
	S-7		T	2	DH	Gypsy Queen 70	1	380–	None	55		30'5"			148.5		3030	1270	4300		234–SL	175–	685	985	23000
	Super 7	Supersette	T	2	AR	121RC	1		None	55		30'9"			136.8		3030	1270	4300		280–				29000
	Super 7	Supersette	T	2																						
Fiat	G-46-2B		T	2	DH	Gypsy Queen 30	1	240–2900	None	42	7¼	34'1½"	27'10"	7'10½"	172.2	11.9	2450	700	3150		204–SL	171–10000	700	1000	20000
	G-46-4B		T	2	AR	MK-1050	1	222–2400	None	42	7¼	34'1½"	27'10"	7'10½"	172.2	11.9	2425	720	3145		194–SL	164–4300	560	1025	17500
	G-59-4A		T	1	RR	T-24-2 Merlin	1	1400–3000	None	127	9½	38'10½"	31'1"	12'1"	227.0	14.3	6180	1450	7630		380–21000	303–18500	620	3500	39700
	G-59-4B		T	2	RR	T-24-2 Merlin	1	1400–3000	None	100	9½	38'10½"	31'1"	12'1"	227.0	14.3	6285	1180	7465		380–21000	303–18500	500	3500	39700
	F-86-K		F	1	GE	7E-TG-190-D17	1	None	7350–			37'2"	40'11"	15'0"	287.9				18000		650–		500		48000*
	G-49-2		T	2	P&W	R-1340-53H1	1	600–2290	None	90		40'11"	30'10"	9'0"	255.0		4720	1256	5975		230–5000	200–13100	1060	1300	24000
	G-80-3B		T	2	DH	Goblin 35	1	None	3500–10750	405		36'1"	41'10"	13'3"	270.6	14.3	9500	3285	12785		515–10000	340–30000	820	3000	36000
	G-82		T	2	RR	None R.N. 2/21	1	None	5000–12500	625^		38'9½"	42'3"	13'4½"	270.6		9700	4080	13780		865–10000	360–30000	1600*	6000	41000
	MK-32	Vampire	F	1	DH	Goblin 3	1	None	3300–	395		38'0"	30'9"	8'2"	270.0		6835	3815	10650		480–15000		750		46800
Piaggio	P-148-MT		T	2	Lyco	O-435-A	1	190–2550	None	45	3	36'5"	27'7"	7'10"	200.0	16.4	1931	715	2646		174–SL	127–3080	570	900	18045
	P-136		T	2	P&W	R-1340-53H1	1	600–2290	None	148	14½	42'4"	30'4½"	9'2½"	271.3	22.9	4277	1323	5600		228–8900	180–8700	690	1380	22100
Sisi-Marchetti	SM-102		Tr,P	2	P&W	R-985	2	900–	None	239	39	59'0"	43'0"	10'9"	437.0	29.1	7600	3625	11125	1907	215–9900	180–11900	664	950	19700

NETHERLANDS

Fokker	S-11	Instructor	T	2	Lyco	O-435-A	1	190–	None	37		36'0"	27'6"	7'10"	199.0		1795	640	2425		130–SL	102–SL	460	660	12600
	S-12	Instructor	T	2	Lyco	O-435-A	1	190–	None	37		36'0"	27'0"	10'2"	199.0		1830	640	2470		125–SL	97–SL	385	660	12400
	S-13	Universal Trainer	T	6	P&W	31H1-G	2	1290–	None	317	13	53'0"	44'6"	18'0"	495.0		9225	3505	12730		220–6000	196–11800	900	1160	20700
	S-14	Mach-Trainer	T	2	RR	Derwent 8	1	None	3470–14550	450		39'5"	43'0"	15'4"	342.0		8304	3496	11800		455–20000	355–30000	900	3100	37000
	S-14	Mach-Trainer	T	2	RR	None	1	None	5100–12500	450		39'5"	43'0"	15'4"	342.0		9365	3485	12850		535–20000	370–30000	540	5100	44000

SPAIN

A.I.S.A.	1-18		L,Ro,Am	3	ET	G-1VB	1	150–2360	None		20	43'8"	30'0"	8'2"	194.8	22.9	1323	992	2317		140–SL	113–SL	465	1080	19600
	1-115		T	2	ET	G-1VB	1	150–2300	None		25¼	37'6"	28'11"	8'2"	152.7	11.1	1499	683	2183		142–SL	121–SL	472	880	19600
Hispano	HA-100-E1		T	2	Elz	E-4	1	794–2200	None	159	7	34'1"	26'1"	10'0"	186.7	15.6	3858		6010		292–9500	269–8500	821	2130	32600
	HA-1109-K1L			1	His	HS-12-Z-17	1	1282–2650	None	105	6	32'6"	27'6"	8'8"	172.2	10.9	5458		8634		351–20600	270–21300	435	3280	32800
	HS-42		T	2	Ch	XXV or XXVII	1	475–2700	None	106	7	32'9"	26'2"	8'8"	175.4	7.2	2962		3940		180–SL	170–SL	755	1430	20800
	HA-100-F1		T	2	Wr	987C7BA1	1	900–2600	None	159	9½	40'11"	32'6"	12'10"	186.8	15.7	4023		6312		298–15700	230–15700	910	1620	26200
	HA-200-R1		T	2	Cont	Marboré II	2	None	882–22000	165	6½	40'11"	32'6"		186.8	15.7	3611		6901		435–33400	302–23600	640	2835	39300

SWEDEN

SAAB	J29B		F	1	DH	Ghost 50	1	None	5000–10250			36'1"	33'2½"	12'3½"	258.0						680–				
	A29		A	1	DH	Ghost 50	1	None	5000–10250			36'1"	33'2½"	12'3½"	258.0						650–				
	S29C		P	1	DH	Ghost 50	1	None	5000–10250			36'1"	33'2½"	12'3½"	258.0						680–				
	J29?		T	1	DH	Ghost 50	1	None				36'1"	33'2½"	12'3½"	258.0										
	91B	Safir	T	1	Lyco	O-435-A	1	190–2550	None	46	3	34'9"	26'0"	7'2"	146.0		1500	900	2570		170–SL	139–9000	700	890	19200
	91C	Safir	T	1	Lyco	O-435-A	1	190–2580		46	3	34'9"	26'0"	7'2"	146.0	17.7	1580	730	2310		173–SL	171–9000	710	1040	21600
	32	Lansen	A,F,Ro,T	2	RR	Avon RA-7	1	None	9500–			42'8"	40'2"	15'3"					22000		700*				
	210	Draken	Ro	1	Ar9	Addor	1	None	1050–15000																

ABBREVIATIONS

*—Flap.
•—Includes aileron.
†—With jet pod engines.
▲—With wing tip tanks.
■—Plus wing tip tanks.
●—Built under license from Hawker.
(a)—Two Wright R3350-32W and two Westinghouse J-34 engines.
(b)—One Hispano-Suiza Nene and one Armstrong-Siddeley Mamba II engines.
A—Attack.
AB—Attack bomber.
Ali—Allison Div.
Am—Ambulance.
AO—Artillery observation.
AR—Alfa Romeo.
Ar9—Armstrong-Siddeley Motors, Ltd.
AS—Anti-submarine.
Av—Alvis, Ltd.
B—Bomber.
Bl—Blackburn and General Aircraft, Ltd.
Br—Bristol Aeroplane Co., Ltd.
C—Cargo.
Ch—Cheetah.
Cont—Continental Motors Corp.
DH—de Havilland Aircraft Co., Ltd.
Elz—Elizalde.
ET—Eamsan Tigre.
F—Fighter.
FB—Fighter bomber.
FL—Flying laboratory.
FT—Fighter trainer.
FTB—Flying test bed.
GE—General Electric Co.
GnR—Gnome-Rhone.
H—Hospital.
HB—Heavy bomber.
His—Hispano.
HS—Hispano-Suiza.
I—Intercepter.
L—Liaison.
Lyco—Lycoming-Spencer Div.
M—Mine layer.
MB—Medium bomber.
Nap—Napier.
NF—Night fighter.
NI—Night intercepter.
OL—Observation and liaison.
OR—Observation and reconnaissance.
P—Photographic.
PB—Pilotless bomber.
PCL—Passenger, cargo or litters.
Pot—Potez.
PRB—Photo-reconnaissance bomber.
Pt—Patrol.
P&W—Pratt & Whitney Aircraft Div.
R—Rescue.
RB—Reconnaissance bomber.
Re—Reconnaissance.
Reg—Regnier.
RF—Reconnaissance fighter.
RR—Rolls Royce, Ltd.
Ro—Research.
Salm—Salmson.
SL—Sea level.
Sn—S.N.E.C.M.A.
Sub—Submarine search.
T—Trainer.
Ta—Tanker.
TB—Torpedo bomber.
TC—Troop and cargo transport.
Tr—Transport.
TT—Tanker transport.
West—Westinghouse Electric Corp.
Wr—Wright Aeronautical Corp.

For Directory of the Aircraft Manufacturers listed above, see page 263

1955 U.S. AND FOREIGN CIVIL AIRCRAFT

MAKE AND MODEL	Type	A.T.C. Number	Number of Crew	Number of Seated Passengers	ENGINE: Make and Model	ENGINE: Number Used	ENGINE: Total Take-off Hp. at Specified RPM	Fuel Capacity (Gal.)	Oil Capacity (Gal.)	DIMENSIONS (Ft. & In.): Span	DIMENSIONS (Ft. & In.): Overall Length	DIMENSIONS (Ft. & In.): Height (Tail Position)	DIMENSIONS (Ft. & In.): Wing Area (Gross) Sq. Ft.	DIMENSIONS (Ft. & In.): Aileron Area (Sq. Ft.)	WEIGHTS (Lb.): Empty	WEIGHTS (Lb.): Useful Load	WEIGHTS (Lb.): Gross	WEIGHTS (Lb.): Pay Load	PERFORMANCE: Maximum Speed at Altitude	PERFORMANCE: Cruising Speed at Altitude	PERFORMANCE: Range in Miles at Cruising Speed	PERFORMANCE: Initial Climb (Ft. per Min.)	PERFORMANCE: Service Ceiling with Normal Load (Ft.)	PERFORMANCE: Fuel Consumption at Cruising Speed (Lb. per Hr.)
UNITED STATES																								
Aero Commander	PC-L		1	5-7	Lyco	2	540-1340	140	3	44'0"	34'2½"	14'9"	242.5	20.6	3960	2180	6080	1293	236 SL	197 10000	1088	1490	21000	166.0
Anderson Greenwood	P-L		1	1	Cont	1	80-2475	23	1¼	34'0"	22'0"		126.0		650	550	1400	350	126* SL	110* SL	450	700*	19000	
Bonanza		6A1	1	4	Cont	2	260-2700	72	4	33'6"	27'8"	9'6"	181.6	17.9	2700	1300	4000	1293	195 SL	165 8000	720	1230	20000	98.0
		6A1	Pond	4	Cont	2	260-2700	72	4	33'6"	27'8"	9'6"	181.6	17.9	2700	1300	4000	1293	195 SL	165 8000	720	1230	20000	98.0
Be	C-1		1	4	Cont	2	E-145-3-H-P	72	4	41'0"	27'8"	10'4"	199.4	17.9	3280	1320	4600	1293	195 SL	165 8000	720	1230	20000	98.0
			Pond	4	Cont	2	O-470-A	72	4	41'0"	27'8"	10'4"	199.4	17.9	3280	1320	4600	1293	195 SL	165 8000	720	1230	20000	98.0
Beech		6A1	Cont	4	Cont	2	A-65	74	4	33'0"	23'10"	9'6"	177.6	11.6	2050	1050	3100	1293	190 SL	165 8000	720	1100	20000	87.2
		6A1	Cont	4	Cont	2	GO-480-A1D	74	4	33'0"	23'10"	9'6"	177.6	11.6	2050	1050	3100	1293	190 SL	165 8000	720	1100	20000	87.2
		6A1	Cont	4	Cont	2	E-185-11	74	4	33'0"	23'10"	9'6"	177.6	11.6	2050	1050	3100	1293	190 SL	165 8000	720	1100	20000	87.2
		A-777	Cont	4	Cont	2	E-225-8	74	4	33'0"	23'10"	9'6"	177.6	11.6	2050	1050	3100	1293	190 SL	165 8000	720	1100	20000	87.2
		A-778	P&W	4	P&W	2	R985AN-14B	89	4	33'6"	23'10"	9'6"	181.0	11.6	2970	1330	4300	1293	194 SL	165 8000	720	1460	20000	87.2
Bellanca		6A1-170	Frank	1-2	P&W	2	6A4-150-B3	80	4	33'6"	21'4"	9'2"	161.5	17.6	1850	900	2750	1293	215 10000	190 SL	930	1400	23700	278.0
		14-13-3	Lyco	1-2	P&W	2	GO-435-A	80	4	33'6"	21'4"	9'2"	161.5		1037	463	1500	1293	170 SL	165 SL	930		23500	
		31-42	P&W	2-7	P&W	2	R985	49	5½	34'2"	27'11"	9'6"	330.0		2650	1320	3970	1293	187 SL	165 SL	1350	900	23000	
Boeing	Stratocruiser	707	P&W	80-130	P&W	4	JT-3	4000*		130'0"	128'0"	38'3"	1769.0		85300	51200	136500	20000	625 MPH	600 MPH	3000	1150	42000*	
Cessna		A-4	Lyco	1	Lyco	1	O-290-D2	35		36'0"	23'0"	7'9"	181.0	10.7	1350	650	1950	1293	125	110	350	1000				42.0
		A-5	Cont	1	Lyco	1	O-320	50		36'0"	23'0"	7'9"	181.0	10.7	1350	650	1950	1293	125	110	350	1000				42.0
		170	Cont	1-2	Cont	1	C-145	42	2	36'0"	25'0"	8'3"	174.0		1360	1123	2483	1293	135	120	750	1230	20000	113.0
		180	Cont	1-2	Cont	1	C-470-A	62	2	36'0"	25'0"	8'3"	174.0		1360	1123	2483	1293	135	120* SL	750	1230	20000	113.0
		190	Cont	1-2	Jac	1	R-755A2	84	5	36'0"	27'4"	8'10"	174.0		1750	1320	3070	1293	162	135* SL	750	1230	20000	113.0
		195	Cont	1-2	Jac	1	R-755A2	84	5	36'0"	27'4"	8'10"	174.0		1750	1320	3070	1293	162	135* SL	750	1230	20000	113.0
		210	Cont	1-2	Cont	1	O-470-A	92	2	36'0"	27'0"	10'1"	174.0		1750	1320	3070	1293	162	135* SL	750	1230	20000	113.0
Colonial	C-1		P&W	1	P&W	2	R-2800-CB-16	120	2	108'0"	76'2"	29'7"	1408.0	43.6	82000	47000	129000	1293	314 14500	284 20000	1980	1220	26000	1256.0
Convair	340		P&W	2	P&W	2	R-2800-CB-16	400	2	105'4"	79'2"	29'7"	1408.0	43.6	91884	58116	150000	1293	314 14500	284 20000	2648.0	1220	26000	1256.0
Douglas			P&W	4	P&W	4	R-2800-CB-17	1900	4	117'6"	81'0"	29'6"	1463.0	88.1	51884	58116	107000	30010	386 16700	315 22400	4100	1060	26000	2548.0
	DC6A-1135A		P&W	4	P&W	4	R-2800-CB-16	1900	4	117'6"	81'0"	29'6"	1463.0	88.1	54140	58860	113000	22779	360 16100	315 22400	3370	1040	26000	2548.0
	DC6B-1135		P&W	4	P&W	4	R-2800-CB-17	1900	4	117'6"	81'0"	29'6"	1463.0	88.1	54620	46180	100800	21740	360 16700	315 22400	4085	1060	26000	2548.0
	DC6B-1135A		P&W	4	P&W	4	R-2800-CB-17	1900	4	117'6"	81'0"	29'6"	1463.0	88.1	55340	45660	101000	21304	360 16700	315 22400	3960	1060	26000	2548.0
	DC6B-1226A		Wr	4	Wr	4	3350-8TD1DA2	1000	4	117'6"	81'0"	29'6"	1463.0	88.0	68073	37927	106000	21304	380 16700	315 22400	3960	1060	26000	2548.0
	DC-7		Wr	4	Wr	4	3350-8TD1DA4	1300	4	127'6"	108'11"	29'7"	1463.0	88.0	72315	66285	138600	20063	400 22100	360 24400	4170	1135	23500	2585.0
	DC-7C		Wr	4	Wr	4	3350-8TD1EA1	1300	4	127'6"	108'11"	29'7"	1463.0	93.4	72315	66285	138600	20063	400 22100	360 24400	4170	1135	23500	2585.0
Fletcher	FU-24		Cont	1	Cont	1	O-470-A	225		40'0"	31'10"	9'4"	294.0	19.6	1980	1535	3470	1250	124 SL	108 SL	370	750	15700	68.4
Helio	Courier		Lyco	1	Lyco	1	GO-435-C2B	260		39'0"	29'0"	8'9½"	231.0		1800	1100	3000	1100		137 6500	600	1150	25600	89.0
Lockheed			Wr	3	Wr	4	3350-8TD1DA1	13000	200	123'0"	113'7"	24'3"	1650.0	99.0	63000	57000	120000	35570	364 20000	300 20000	4300	1125	24100	3050.0
	1049B-55		Wr	3	Wr	4	3350-8TD1DA1	13000	200	123'0"	113'7"	24'3"	1650.0	99.0	64000	56000	120000	19400	364 20000	300 20000	4300	1125	24100	3050.0
	1049E-55		Wr	3-11	Wr	4	3350HPHDA2	13000		123'0"	113'11½"	24'9½"	1654.0	99.6	73016	64484	137500		376	335	5340	1080	30100	
	1049G		Wr	47-99																				
Martin		4-0-4	P&W	3	P&W	2	R-2800-CB16	4000		93'3"	79'7"	25'6"	864.0	41.6	78126	15874	94000	11982	312 14500	288 10000	1825	1995	29000	1270.0
Meyers		1-A	Cont	1	Cont	1	1-400	140	2	30'0"	21'10"	6'6"	155.0		1360	680	1960	120		150 MPH	600	1000	18000	48.0
		200	Cont	1	Cont	1	O-470	225	2	30'0"	24'0"		155.0	9.6	1725	1125	2850			130 6000	1200	980	21000	66.0
		M-202	Cont	1	Cont	1	A65-8	66	2	29'10"	22'6"	9'3"	158.9	13.1	1540	310	2050		142 SL	130 10000	1200	1000	21000	71.0
Mooney	Mark 20		Lyco	1-3	Lyco	1	O-320	170	2	33'0"	22'6"	8'3½"	166.9	13.1	1335	1125	2460	630	175 7000	175 7000	1020	1150	22000	78.0
Piper		PA-18-95	Cont	1	Cont	1	C90	36	1¼	35'3"	22'4"	6'8"	178.5	10.8	880	700	1580	430	112 SL	100 SL	430	710	20000	30.2
	PA-18-150		Lyco	1	Lyco	1	O-290-D2	38	2	35'3"	22'4"	6'8"	178.5	10.8	885	740	1625	430	122 SL	112 SL	700	1050	20500	49.0
	PA-20		Lyco	1-3	Lyco	1	O-320	72	2	35'3"	23'3"	7'2"	178.5	10.8	1340	750	2090	750	132 SL	117 SL	720	1350	21000	49.0
	PA-22-150		Lyco	1	Lyco	1	O-320	72	2	33'4"	21'5"	7'2"	147.5	13.2	1180	690	1870	450	137 SL	123 SL	670	820	18000	49.2
Ryan		T-1	Lyco	2	Lyco	1	O-320	150	2	33'4"	24'4"	7'3"	167.0	18.0	1225	675	1900	300	135 6000	130 6000	800	950	10000	59.0
			Cont																					
Saab		32B	Lyco	1	Lyco	1	O-435*	130		29'6"	23'6"	10'6"												
	32A		Cont	1						22'2"	17'4"				650			40	150	135		1400	12000*	

Taylorcraft	BC-12-D	PC-LS	696	1	1	Cont	A-65-A	1	65		18	1	36'0"	21'9"	6'6"	103.7		800	400	1200	200	105-5000	95-5000	550	750	19000	24.0
	15-A	DC-L	343	1	3	Cont	C-145-2H	1	145		42	2	36'0"	24'0"	7'2"	106.3	14.3	1300	900	2200	670	137-5000	126-5000	580	800	14700	54.0
	19	PC-LS	1A9	1	1	Cont	C-85-12F	1	85		24	1½	36'0"	22'0"	6'6"	103.7	10.2	865	635	1500	450	120-5000	110-5000	440	500	17000	36.0
	Custom Deluxe		696			Cont	C-85-8	1	85		24		36'0"	22'0"	6'6"	103.7			660	1500		120-5000	110-5000	400	700	17000	
	20	PC-L	Pond	1	3	Cont	O-470-A	2	225-[illegible]		60	3	36'0"	24'1½"	7'1½"	106.0	14.3	1625	1103	2750	643	160-2500	150-2500			18000	84.0
Temco	D-16A	P-L	Pond	1	3	Lyco	O-340-A	2	240-2700		146	4	33'4½"	27'2"	9'6½"	178.3	9.6	2350	1250	3600	614	160-SL	170-7000	1200	1400	20000	84.0
BELGIUM																															
Avions Fairey	Tipsy Junior	P-L		1	N	Cmd	A65	1	62-2300		12	1½	23'1"	18'9¾"	4'5"	114.0	13.8	425	265	772		110-SL	90-SL	360	600	18000	30.0
	Tipsy Belfair	P-L		1	1	WM	11	1	62-2600		15	2	31'0"	21'7"	5'6"	129.0	13.6	612	481	1103		115-SL	100-SL	465	867	18600	30.0
GREAT BRITAIN																															
Armstrong-Whitworth	Apollo	P-L		4	24-40	ArS	Mamba	4	5000*-15000		1374	10	92'0"	71'6"	26'0"	988.0	64.5	28950	16050	45000	7500	310-25000	276-25000	1200	1500	35000	1400.0
Auster	Aiglet	P-L		1	2	DH	Gypsy Major MK-1	1	130-2350		18	4	36'0"	23'8"	6'5"	184.8	18.0	1215	765	2000		126-1000	105-1000	245	710	15000	46.0
	Autocar	P-L		1	3	DH	Gypsy Major MK-1	1	130-2350		38	4	36'0"	23'2"	6'3"	184.8	18.0	1413	987	2400	570	117-1000	100-1000	500	525	11000	46.0
	Freighter	G-L		1	3	Bl	702	1	180-2600		27½	3	37'0"	24'8"	6'4½"	188.5	9.3	1642	958	2600	600	121-1000	105-1000	300	730		
	J-5-F	TP-L		2	2	DH	Gypsy Major 1	1	130-2350		19	3½	32'0"	22'2"	6'3"	185.0	18.0	1367	1063	2450	650	127-SL	110-SL	485	710	14000	80.0
	J-5-G	PA-L		1	3	Bl	Cyrus Major 3	1	155-2450		38	3½	36'0"	23'2"						2200		132-					
	Aiglet	T-L		1	2	DH	Gypsy Major	1	130-				32'9"	23'2½"														
Blackburn	Universal	PC-L		2-4	290*	Br	Centaurus 673	4	11400-2800		4300	140	162'0"	99'8"	38'9"	2916.0	168.0	79100	55900	135000	40000	236-7500	223-5000	1500	700	18750	2620.0
Bristol	Britannia 100	P-L		7	92	Br	Proteus 706	4	(a)		8170	53	142'3"	114'0"	36'8"	2075.0	140.0	80490	69510	150000	25000		372-22500	4000	1500	32500	4800.0
	Britannia 300	P-L		7	101	Br	Proteus 755	4	(b)		9870	53	142'3"	124'3"	36'8"	2075.0	140.0	82320	82680	165000	30000		365-20000	3650	1700	35000	5700.0
	Britannia 300L.R	P-L		7	101	Br	Proteus 755	4	(b)		9870	53	142'3"	124'3"	36'8"	2075.0	140.0	82850	82150	165000	30000		365-20000	4500	1670	35000	5700.0
	Britannia 250L.R	PC-L		7	87	Br	Proteus 755	4	(b)		9870	53	142'3"	124'3"	36'8"	2075.0	140.0	83360	81040	165000	36700		375-24000	4000	1670	35000	5000.0
	170 & Wayfarer	PC-L		3	50	Br	Hercules	2	4000-2600		1400	53	108'0"	68'4"	21'6"	1467.0	84.3	27110	16115	44000	14065	183-10000	164-5060	1600	1380	22500	700.0
	Britannia 200	C-L				Br	Proteus 750		6800					124'3"						156000							
	171 MK-4	H		1	4-6	Av	Leonides	1	520-		59	6	48'7"	46'2"	14'7"	1060.0		3963	1417	5400		126-	90-	368	1150	18500	150.0
de Havilland	Heron Series 1	P-L		2	14-17	DH	Gipsy Queen 302-2	4	10000-2800		380	21	71'6"	46'6"	15'7"	499.0		7564	4823	13300	3070		165-5000	500	1000	16000	
	Comet 2	P-L		6	44-48	RR	Avone	4	26000*-		9400		115'0"	96'0"	28'4½"	2015.0				120000	13000		500-40000	2300			
	Comet 3	P-L		6	58-76	RR	Avone	4	36000*-		9870		115'0"	111'0"	28'4½"	2121.0				150000	19000		500*-40000	2700			
	Dove MK-5	P-L			8-11	DH	Gipsy Queen 70 MK-2	2	750-3000		150	11¼	57'0"	39'3"	13'4"	338.6		5685	1991	6800	1815	219-6000	170-6000	800	920	19400	
	Chipmunk	T-L		2	N	DH	Gipsy Major 10 MK-2	1	145-2250		29	3	34'4"	23'8"	7'0"	172.8		1430	670	2100		138-SL	119-SL	320	840	15500	
	Airspeed Ambassador	P-L		5	47-49	Br	661	2	2690-		1260	56	115'0"	82'0"	18'4"	1290.0	72.0	36774	16226	53000	12000	275-19000	230-20900	1700	1200	25000	910.0
Handley Page	Herald	PC-L		2	36-44	Av	Leonides Major	4	3480-3000		1000	40	95'0"	70'3"	22'6"	862.0	60.0	26822	13678	34000	10700	255-6300	231-13500	2175	1620	23000	694.0
Hunting Percival	Prince Series V	PCS-L		1-2	8-12	Av	Leonides 503-4	2	1100-3000		230	14	64'6"	48'4"	16'1"	480.0	30.2	7563	4947	12500		220-1900	167-6000	1110	1500	22500	342.0
	Prevost	T-L		2	N	Av	Leonides MK-2500	1	550-		72	6	35'2"	29'9"	8'10"					4250		209-2500	177-11500	633	2100	22500	
Saunders-Roe	Princess	P-S		8	200*	Br	Proteus	10	37500-		17400		219'6"	148'0"	55'9"	5080.0				230000	50000		300-36900	5500			
	Skeeter 5	H		1	1	Bl	Cirrus Bamberdier 702	1	180-2600				32'0"	31'2"				1570	530	2100		99-		265	600	19000	
	Mark 6	H		1	1	DH	Gipsy Major 30	1	185-2600				32'0"					1590	610	2200		101-	89-	258	940	18048	
Scottish Aviation	Pioneer	PC-L		1	4-5	Av	Leonides 502/4	1	550-3000		72	5½	49'9"	34'4"	10'1"	390.0	32.5	4013	1787	5800	1145	162-1750	120-8000	427	1145	23000	115.0
	Pioneer	PC-S		1	4	Av	Leonides 502/4	1	550-3000		72	5½	49'9"	34'7"	10'1"	390.0	32.5	4259	1541	5800	890	153-2000	110-8000	426	1100	23000	109.0
	Pioneer	PC-L		1	4	P&W	Wasp Jr.	1	450-2300		72	5½	49'9"	34'7"	10'1"	390.0	32.5	3762	1518	5280	870	161-3500	120-8000	416	835	19000	120.0
	Twin Pioneer	PC-L		1	16	Av	Leonides 503/3	2	1100-3000		192	10¾	76'0"	48'1"	11'7"	670.0	44.0	9075	4425	13500	3000	180-1750	139-5000	565	800	23000	280.0
Short	Sealand SS1	P-LS		1	5-8	DH	Gypsy Queen 70	2	900-2800		173	14	89'0"	42'2"	14'0"	358.0	19.1	7259	1841	9100	935	200-5000	127-8000	495	700	20000	144.0
Vickers-Armstrong	700	P-L	VC-2	3-5	40-88	RR	Dart 506	4	(c)		2350	18	94'0"	81'2"	26'9"	963.0	71.8	34360	22900	58500	13450	340-20000	330-20000	2070	1220	27500	2550.0
	700D	PC-L	N	3-5	40-56	RR	Dart 510	4	(d)		2350	18	93'8½"	81'2"	26'9"	963.0	71.8	37500	22720	60000	12700	340-20000	320-20000	2070	1200	27500	2550.0
	800	PC-L	N	3-5	53-70	RR	Dart 510	4	(d)		2350	18	93'8½"	85'0"	26'9"	963.0	71.8	37500	22720	62000	13800	330-20000	320-20000	2060	1230	25000	2460.0
Westland	WS-51	H		1	3	Av	Leonides 521/1	1	550-3000		53		49'0"	46'0"	13'0"					1450	180	103-5000	86-5000	380		13000	175.0
	WS-55	H		2	8-10	P&W	R-1340	1	600-2250		150		53'0"	42'2"	15'3"					4833	1954	7200	894	99-5000	85-5000	380		11000	302.0
CANADA																															
de Havilland	DHC-2	PC-LS		1	6-7	P&W	R-985-AN6B	1	400-2300		95	6¼	48'0"	30'3"	9'0"	280.0	24.6	2960	2140	5100	1722	163-5000	140-5000	650	1020	18000	115.0
	DHC-3	PC-LS		1	10-14	P&W	R-1340-S1H1-G	1	600-2250		216	10¾	50'0"	41'10"	12'7"	375.9	26.3	4384	3242	7600	2750	160-5000	139-5000	1145	1900	19000	160.0
FINLAND																															
Karhu	48	PC-LS		1	3	Lyco	O-435-A	1	190-				49'3½"	30'1½"		198.3		1480	1260	2734	783	142-	116-	485			
FRANCE																															
Aubert	Cigale Major	P-L		1	3	Sn	4L21	1	170-																						
	PA-300	P-L		1	1	Lyco		1	135-																						
Beisavia	B-604	P-L		1	3	Salm		1	220-																						
	B-605	P-L				Sn	4L02	1	170-				44'6½"	29'2¾"	8'2"			1433	1146	2579		152-	130-	745	1290	19680	
	B-250	P-L		1	3-4	Sn	4L02	2	240-																						
Breguet	763	PC-L		2-3	107	P&W	CA18	4	9600-		4043		141'0"	94'9"	25'6"	1098.9		66301	45456	113757	37250	261-	230-	2285	1400	19100	2116.4
Brochet	MB-80	T-L		1	1			1																							
	MB-100	P-L		1	2-3	Hir	804	1	195-				36'8"	23'0"	6'8"	153.0		1190	683	1873		112-	97-	370	430	11800	
	MB-120	P-L		1	1	Cont		1	90-																						
C.A.B.	Minicab	P-L		1	1	Cont	C90	1	90-				29'0"	17'0"	4'9"	107.0		695	605	1200		100-	142-		560	19000	
	Supercub	P-L		1	1	Cont		1	90-				27'9"	18'9"	5'4"			861	475	1336		171-	146-	745	720	19400	
Farman	Monitor I	T-L		1	1	Ren		1	140-				30'9"	22'3"	9'2"			1236	573	1800		127-	112-	495	860	16360	
	Monitor III					Sn	4L21	1	170-																						
	Monitor II					Ar		1	225-																						

For abbreviations and references see page 224

For Directory of the Aircraft Manufacturers listed above, see page 263

U. S. AND FOREIGN CIVIL AIRCRAFT—*concluded*

MAKE AND MODEL	Type	A. T. C. Number	Number of Crew	Number of Seated Passengers	ENGINE: Make and Model	ENGINE: Number Used	ENGINE: Total Take-off Hp. at Specified RPM	Fuel Capacity (Gal.)	Oil Capacity (Gal.)	DIMENSIONS (Ft. & In.): Span	DIMENSIONS (Ft. & In.): Overall Length	DIMENSIONS (Ft. & In.): Height (Tail Position)	DIMENSIONS (Ft. & In.): Wing Area (Gross) Sq. Ft.	DIMENSIONS (Ft. & In.): Aileron Area (Sq. Ft.)	WEIGHTS (Lb.): Empty	WEIGHTS (Lb.): Useful Load	WEIGHTS (Lb.): Gross	WEIGHTS (Lb.): Pay Load	PERFORMANCE: Maximum Speed at Altitude	PERFORMANCE: Cruising Speed at Altitude	PERFORMANCE: Range in Miles at Cruising Speed	PERFORMANCE: Initial Climb (Ft. per Min.)	PERFORMANCE: Service Ceiling with Normal Load (Ft.)	PERFORMANCE: Fuel Consumption at Cruising Speed (Lb. per Hr.)
FRANCE—*continued*																								
Heinkel MH-1021	PC-L		1	6	P&W R-985	1	450			48'0"	28'2"	9'1"	272.0		3249	2240	5489	1232	171			745	1170	18500	
Hurel-Dubois HD-32	PC-L		3	44	P&W R-1830-92	2	2400	396		146'7½"	76'4½"	27'6¾"	1076.4	77.7	24089	20059	44150	11625	210-10000	183-10000	1060	905	21300	535.0
Jodel D-3	P-L		1	1	Cont	1	65			26'9"	20'5"		138.0		595	463	1058		124	99	370	650	12250	
Morane-Saulnier MS-734	P-L		1	3	Salm	1	250-2000	92	3½	37'0"	31'1½"	11'4"	235.0	21.0	2000	1380	4190	620	157-SL	128-3300	705	600	11500	82.0
MS-760	P-L		1	3	Cont Marboro II	2	1760*-22600	360	5½	31'4"	32'11"	9'0"	194.0	21.0	4190	3210	7400		405-20000	345-23000	930	2300	34000	800.0
S.N.C.A.N. Nord-2501	PC-L		3	42	Sn Hercules	2	4000-2000	1345	73¾	102'9"	71'8"	20'8"	1085.0	42.2	20660	15432	44092	11800	273-10000	206-10000	1550	1230	24600	770.0
Nord-3201 T-L			1	1																				
Nord-1750 H			1		Cont Artouste	1																		
S.N.C.A.S.E. SE-210	P-L		4	70-91	RR Avon RA-16	2	20000*-	5620		112'6"	103'4"	29'6"	1570.0		42880	54120	97000	21000		480-36000	2900				
SE-3120 H			1	2	Salm SNH	1	283-2150	32	3	32'0"	34'4"	9'6"			1650	1110	2760	660	75-	63-	172	495	8160		
SE-3130 PC-L			1	3	Cont Artouste II	1	360*-32000			32'9"	31'9"	9'0"			1630	1150	2980		113-SL	106-	250	1180	13500		
S-56 H			1	7	P&W R-1340	1	600-2250	105		53'0"	42'0"	13'11"			4765	2050	6835		105-SL	91-	450	845	11850		
S.N.C.A.S.O. SO-1221	H		1		Cont Palouste	1		66			17'8"	8'7"			695	865	1550	660	60-	62-	145	300	12000		
ITALY																								
Aer Macchi MB-308	P-L		1	1	Cont C-65	1	65-2575	21	1	32'9½"	21'5"	7'2"	147.6	11.8	902	526	1430	528	106-SL	89-SL	470	630	14200	28.6
MB-308 P-L			1	1	Cont C-90	1	90-2475	21	1	32'9½"	21'5"	7'2"	147.6	11.8	902	526	1430	528	110-SL	92-SL	445			30.0
MB-308-1 P-S			1	1	Cont C-90	1	90-2475	21	1	32'9½"	21'5½"	8'8"	147.6	11.8	1035	484	1519	484	108-SL	89-SL	435			
MB-308-G P-L			1	2	Cont C-90	1	90-2475	23¾	1	32'9½"	21'5"	7'2"	147.6	11.8	946	638	1584	638	103-SL	90-SL	335			32.7
MB-320 PC-L			1	5	Cont E-185	2	410-2900	93	8	42'7½"	28'5"	10'8"	227.1	16.2	3652	904	4500	944	162-SL	136-6500	810	925	14750	116.0
MB-320 PC-L			1	5	Cont E-225	2	460-2600	93	8	42'7½"	28'5"	10'8"	227.1	16.2	3652	904	4500	944	160-SL	143-6500	760	1220	17900	120.0
MB-320 PC-L			1	5	Cont E-225	2	460-2600	93	8	42'7½"	28'5"	10'8"	227.1	16.2	3652	904	4500	944	160-SL	143-6500	760	1220	17900	120.0
Fiat G-212-CP	P-L		4	26-30	P&W R-1830-S1C3-G	3	3600-2700	1185	80	90'3"	75'7½"	21'4"	1255.0	70.0	24700	15000	39700	8500	230-12000	200-10000	1700	985	24750	822.0
Piaggio P-148	P-L	RA1	1	2	Lyco O-435-A	1	190-2550	46	3	36'5"	27'7"	7'10"	200.0	16.4	1960	870	2825		146-SL	124-6500	450	845	14400	56.5
P-148-MT T-L	RA1	1	1	Lyco O-435-A	1	190-2550	46	3	36'5"	27'7"	7'10"	200.0	16.4	1031	715	2646		147-SL	127-3000	570	900	15000	56.5
P-136-L PC-LS	RA1	1	4	Lyco GO-435-C2	2	520-3400	190	6	44'4½"	39'5½"	11'5"	268.0	25.0	4210	1630	5840	1220	174-SL	157-7000	950	1100	18050	165.0
P-148 PC-L	RA1	1	3	Lyco GO-435-C2	2	520-3400	63	3	36'5¾"	28'1½"	9'6¼"	202.5	16.4	2440	1200	3640	800	184-SL	155-6700	850	940	17000	98.0
Siai-Marchetti SM-102	P-L		2	6	P&W R-985	2	930-	230	28	59'0"	43'0"	10'6"	437.0	29.1	7900	3825	11125	1907	215-5000	180-11500	680	980	19700	265.0
NETHERLANDS																								
Fokker S-11	T-L		2	N	Lyco O-435-A	1	190-	37		36'0"	27'0"	7'10"	190.0		1785	640	2425		130-SL	102-SL	400	660	12600	
S-12 T-L			2	N	Lyco O-435-A	1	190-	37		36'0"	27'0"	10'2"	190.0		1630	640	2470		125-SL	97-SL	385	660	12400	
S-13 T-L			6	N	P&W S1-H1-G	2	1200-	317	13	63'0"	44'6"	16'0"	495.0		9225	3505	12730		220-6000	198-11800	900	1160	20700	
F-27 P-L			3	28-36	RR Dart RDA-6	2	(e)	962		95'0"	73'0"	27'6"	764.0		20610	13590	34200	9535	280-20000	276-20000	300	1420	34000	1235.0
SPAIN																								
A.I.S.A. 1-11B P-L			2	N	Cont C-90	1	90-2625	80	1½	30'7"	20'1"	8'2"	144.1	12.0	928	849	1477		127-SL	110-SL	425	695	14900	33.1
Aeronautica S.A. CASA-201 P-L			2	8	ArS Cheetah XXVII	2	950-2700	318	17	40'4"	45'9"	12'11"	449.8	34.0	6380	3200	11580	1620	195-4600	179-7650	375	923	17700	240.0
CASA-202 P-L			3	14	Enm Bota 8-4	2	1530-2200	566	30	70'9"	52'6"	12'6"	617.6	47.3	11600	5490	17090	2840	223-9300	202-	694	1020	24000	606.0
SWEDEN																								
Saab 90A-2	P-L		2-3	32-40	P&W R-2180E-1	2	7200-2900	770	55	91'10"	69'11"	23'3"	922.0	69.4	21960	13310	35270	9500	277-10500	240-10000	1480	1350	29600	825.0
91B TP-L			1	2	Lyco O-435-A	1	190-2550	42	3	34'9"	26'0"	7'2"	146.0		1580	990	2570		170-SL	169-5000	700	880	19200	94.0
91C TP-L			1	3	Lyco O-435-A	1	190-2550	42	3	34'9"	26'0"	7'2"	146.0		1625	1060	2685		169-SL	168-5000	630	840	17800	94.0

ABBREVIATIONS

*—Plus.
*—Pounds of thrust.
†—With auxiliary tank, 610.
*—Continental engines from 65 hp. to 200 hp. can be installed.
(a)—13,280 hp. and 4,800 lb. thrust.
(b)—14,600 hp. and 5,280 lb. thrust.
(c)—5,600 hp. and 1,460 lb. thrust.
(d)—6,200 hp. and 1,460 lb. thrust at 14,500 rpm.
(e)—3,200 hp. and 730 lb. thrust.
Ar—Argus.
ArS—Armstrong Siddelley Motors, Ltd.
AU-L—Agricultural or utility, land.
Av—Alvis, Ltd.
Bl—Blackburn and General Aircraft, Ltd.
Br—Bristol Aeroplane Co.
C-L—Cargo, land.
Cont—Continental Motors Corp.
DH—de Havilland Engine Co., Ltd.
DS-L—Duster sprayer, land.
Enm—Enmasa.
ET-L—Executive transport, land.
Frank—Franklin (Aircooled Motors Inc.).
H—Helicopter.
Hir—Hirth.
Jac—Jacobs Aircraft Engine Co.
L—Land.
Lyco—Lycoming Spencer Div.
N—No or none.
PA-L—Passenger or agricultural, land.
PC-L—Passenger or cargo, land.
PC-LS—Passenger or cargo, land or sea.
PCS-L—Passenger, cargo or survey, land.
Pend—Pending.
P-L—Passenger, land.
P-LS—Passenger, land or sea.
P-S—Passenger, sea.
P&W—Pratt & Whitney Aircraft Div.
Ren—Renault.
RR—Rolls Royce.
Salm—Salmson.
SL—Sea level.
Sn—S.N.E.C.M.A.
TCS-L—Trainer or crop sprayer, land.
T-L—Trainer, land.
TP-L—Trainer or passenger, land.
WM—Walter Mikron.
Wr—Wright Aeronautical Corp.

For Directory of the Aircraft Manufacturers listed above, see page 263

★ 1955 U.S. ROTARY WING AIRCRAFT ★

MAKE AND MODEL	GENERAL					ENGINE			MAIN ROTOR								ANTI-TORQUE ROTOR					WEIGHTS (Lb.)			PERFORMANCE							LANDING GEAR	
	A. T. C. Number	Number of Seats	Fuel Capacity (Gal.)	Octane Number Recommended	Oil Capacity (Gal.)	Make and Model	Number Used	Rated Hp. at Specified R. P. M.	Number Used	Location	Blades per Rotor	Diameter of Rotor (Ft. In.)	Blade Area (Sq. Ft.)	Type (If more than one used)	Rotor R. P. M. at Cruising Speed	Disc Area (Sq. Ft.)	Number of Blades	Rotor Diameter (Ft. In.)	Blade Area (Sq. Ft.)	Rotor R. P. M. at Cruising Speed	Disc Area (Sq. Ft.)	Gross (Normal Load)	Empty	Useful Load	Max. Speed at Altitude	Cruising Speed at Altitude	Fuel Consumption Cruising Speed (Lb./hr.)	Range (Miles) at Cruising Speed	Rate of Climb: Maximum (Ft./min.)	Rate of Climb: Vertical (Ft./min.)	Service Ceiling—Normal Load	Type	Track—Main Gear
Bell 47G(H13G,H13,HTL)		3	40	91	2	Frank. 6V-200-C32	1	200	1		2	35'1½"	35.3		340	965	2	5'8"	2.4	1550	25.9	2350	1400	941	90-	76-	72	225	800	400	12500	S	7'6"
XV-3						P&W	1										2	(Data Restricted)														S	
XH-13F		3				Cont. Artouste	1	280	1	C	2							(Data Restricted)														Qua	
61(HSL-1,XHL-1)			425			P&W. R-2800	1	1900	2	Tan	2	51'6"													120-							S	7'6"
47H		3	35	91	2	Frank. 6V4-200-C32	1	200	2	C	2	35'1½"	35.3		340	965	2	5'8"	2.4	1550	25.9	2350	1400	670	100*-				200*			S	7'6"
47J		4	35	80	3	Lyco. O-435-V1	1	250	1	C	2	38'1½"	35.3		340	965	2	5'8"	2.4	1550	25.9				100*-				200*			S	7'6"
Cessna. CH-1		2-4	60	91	3	FSO-470	1	260-3000	1		2	35'0"	37.9		340	962	2	7'0"	3.3	1630	28.5	3000	1900	1100	100*-SL	100*-SL	110	380	800*		12000*	S	9'4"
Doman. LZ-5		7	110	100	5	Lyco. SO-580-D	1	400-3300	1		4	46'0"	73.6		395	1810	3	9'0"	5.9	1000	63.9	6000	3200	1800	98-3000	86-3000	111	180	1020	300	10000	Qua	7'2"
VH31		4	110	100	5	Lyco. SO-580-D	1	400-3300	1		4	46'0"	73.6		395	1810	3	9'0"	5.9	1000	63.9	4700	3290	1560	105-3000	86-3000	111	220	1300	600	14000	Qua	7'2"
Gyrodyne. 2C		7				P&W. R-985	1	450-2300	2	CA	2	48'0"			192	1810						5750	3000	1950	75*-SL	60-SL		217	1800	340	9200	Tri	
2D		3				Wri. R-3350-32	4	3400-2900	2	CA	4	100'0"			75	20100						100000	33000	67000	120-SL	90-SL		134	1625	1400	19000	Amp	
33		2				Lyco. O-320	1	150-2700	2	CA	2	25'0"			380	616						1570	1057	513	74*-SL	60-SL		104	1440	1165	13000	Tri	
Hiller. UH-12B	6H2	3	28	91	2½	Frank. 6V4-200-C33	1	200-3100	1	C	2	35'0"	32.3		330	963	2	5'6"	2.29	1957	23.8	2500	1705	795	84-	70-	67	128	770		9400	Skid†	7'6"†
																																Qua	7'6"
Kaman. K-240(HTK-1)	1H3	3	40	91		Lyco. O-435	1	250-	2	LI	2	48'0"		Int	233			(Data Restricted)														Qua	7'6"
HOK-1		4		100		P&W. R-1340	1	600-	2	LI	2	42'0"		Int				(Data Restricted)														Skid	
McDonnell. XV-1		4				Cont.	1		1		3							(Data Restricted)														Tri	
Piasecki. H-21B		22	300	100		Wri. 1820-103	1	1425-2700	2	Tan	3	44'0"		Tan			N					13300	9460	4820	130-SL	98-5000		370	1100*	900*	10000	Tri	
H-21C		22	300	100		Wri. 1820-103	1	1425-2700	2	Tan	3	44'0"		Tan			N					13300	9460	4820	130-SL	98-5000		370	1100*	900*	10000*	Tri	
YH-16		43		100		P&W. 2180	2	1650-	2	Tan	3	82'0"		Tan			N					30000			125*-				200*			10000*	Tri	
YH-16A		62				All. T-32	2	1800*	2	Tan	3	82'0"		Tan			N								125*-				200*					
Rotor CraFt		1					2		1	C	2						1	(Data Restricted)															
Sikorsky. S-55	1H4	12	105	80	9½	P&W. R-1340	1	600-2250	1	F	3	53'0"			194	2206	2	8'8"		1300	88.9	7200	4795	2405	101-(†)	86-(†)	222	405	780	200	11500	Qua	11'6"
S-56		4	130			Cont. Artouste	1	400-38000	1	C	4	30'0"				661	3	6'4"			31.0	3560	2288	1260	127-SL	120-SL	429	220	750	800	16000	Conv	
S-58						Wri. R-1820-84	1		1		4						4	(Data Restricted)															
S-59						P&W. R-2800	2		1		5						4	(Data Restricted)															

ABBREVIATIONS

*—Plus.
†—Navy model, quadracycle
†—Navy model, 7'5".
(†)—Sea level to 6,300 ft.

All—Allison Div.
Amp—Amphibious.
C—Center.
CA—Co-axial.
Cont—Continental Motors Corp.
Conv—Conventional.
F—Forward.
Frank—Franklin (Aircooled Motors).
Int—Intermeshing.
LI—Lateral intermeshing.
Lyco—Lycoming-Spencer Div.
P&W—Pratt & Whitney Aircraft Div.
Qua—Quadracycle.
S—Skid.
SL—Sea level.
Tan—Tandem.
Tri—Tricycle.
Wri—Curtiss-Wright.

For Directory of the Aircraft Manufacturers listed above, see page 263

RECIPROCATING TYPE

ENGINE MAKE AND MODEL	A.T.C. Number	GENERAL DATA: Arrangement	Cooling Medium	Number of Cylinders Bore and Stroke (In.)	Total Piston Displacement (Cu. In.)	Compression Ratio (to —1)	B.M.E.P. at Maximum No. (Lb. per Sq. In.)	Blower Ratio	Cylinder Material	No. of Valves per Cylinder: Intake	Exhaust	Valve Arrangement	RATINGS: Maximum (Except Take-off): Horsepower	R.P.M.	At Sea Level or Altitude (Ft.)	Take-off: Horsepower	R.P.M.	Cruising: Horsepower	R.P.M.	Octane Rating of Fuel Required	Propeller Drive Ratio (to —1)	Weight (Lb.): Engine Dry—Without Hub or Starter	Per Maximum No. (Except Take-off)	Carburetor: Number Used and Make	Type	Ignition System—Make	Starting: Make	Method	Installation Dimensions (Overall—Ins.): Length	Height or O. D.	Width	Height above Engine End	Diameter Mounting Ring or Distance Between Mounts
Continental																																		
A65-8	208	Hor	Air	4-3⅞x3½	171.0	6.30	131	N	(1)	1	1	In	65	2300	SL	65	2300	55	2150	73	D	176	2.70	1-Str	FL	Eis	N	EM	31.00	23.30	31.50		
C85-12	233	Hor	Air	4-4⅛x3½	188.0	6.30	139	N	(1)	1	1	In	85	2575	SL	85	2575	61	2300	73	D	176	2.14	1-Str	FL	Scin	N	EM	31.00	24.20	31.50		
C85-8F	233	Hor	Air	4-4⅛x3½	188.0	6.30	139	N	(1)	1	1	In	85	2575	SL	85	2575	61	2300	73	D	184	2.07	1-Str	FL	Scin	DR	EM	32.00	24.20	31.60		
C90-8F	252	Hor	Air	4-4⅛x3½	200.0	7.00	143	N	(1)	1	1	In	90	2475	SL	90	2455	64	2200	80	D	184	2.07	1-Str	FL	Scin	DR	EM	31.00	24.20	31.50		
C90-12F	252	Hor	Air	4-4⅛x3½	200.9	7.00	143	N	(1)	1	1	In	90	2475	SL	95	2655	64	2200	80/87	D	188	2.06	1-Str	FL	Scin	DR	EM	32.00	24.20	31.60		
C145-2	253	Hor	Air	6-4⅛x3½	301.3	7.00	141	N	(1)	1	1	In	145	2700	SL	145	2700	109	2450	80/87	D	265	1.82	1-MS	FL	Scin	DR	EM	33.38	23.25	31.38		
E-185	246	Hor	Air	6-5x4	471.0	7.00	135	N	(1)	1	1	In	185	2300	SL	205	2600	135	2070	80/87	D	355	1.86	1-Str	PI	Scin	DR	EM	46.66	22.30	33.41		
E225-8	267	Hor	Air	6-5x4	471.0	7.00	143	N	(1)	1	1	In	225	2650	SL	225	2650	175	2400	80/87	D	367	1.90	1-Str	PI	Scin	Ecl	EM	46.66	22.30	33.41		
O-470-11	269	Hor	Air	6-5x4	471.0	7.00	140	N	(1)	1	1	In	190	2300	SL	213	2600			80	D	383	2.07	1-Str	PI	Scin	Ecl	EM	45.20	30.10	33.41		
W-670-23	162	Rad	Air	7-5⅛x6½	667.0	6.10	130	N	(1)	1	1	In	240	2200	SL	240	2200	175	2000	80/87	D	519	2.12	1-Str	FL	Scin		EM	35.56	42.25	42.50		
O-315-A		Hor	Air	4-5x4	315.0	7.10	145	N	(1)	1	1	In	150	2600	SL	150	2600	115	2400	80/87	D	263	1.74	1-MS	FL	Scin	DR	EM	28.13	23.63	33.39		
O-470-A	273	Hor	Air	6-5x4	471.0	7.00	145	N	(1)	1	1	In	225	2600	SL	225	2600	175	2400	80/87	D	381	1.69	1-MS	FL	Scin	DR	EM	36.03	27.75	33.62		
*O-470-5		Hor	Air	6-5x4	471.0	7.00	148	2.00	(1)	1	1	In	250	3200	13500	285	3200	200	3200	91/96	D	470	1.88	1-Ben	PI	Ben	Ben	EM	36.56	33.75	34.68		
*R670	34	Rad	Air	9-5x5½	973.0	6.30	186	10.15	(1)	1	1	In	300	2500	6700	525	2300	300	2500	100/130	D	725	1.45	1-Ben	PI	Ben	Sev	EM	42.44	44.80			
O-470-B	273	Hor	Air	6-5x4	471.0	8.00	186	N	(1)	1	1	In	240	2600	SL	240	2600	180	2360	91/96	D	410	1.71	1-Ben	PI	Scin	DR	EM	43.31	19.62	33.62		
O-470-13	269	Hor	Air	6-5x4	471.0	7.00	146	N	(1)	1	1	In	225	2600	SL	225	2600			80	D	415	1.84	1-Ben	PI	Scin	Ecl	EM	40.00	26.44	33.62		
O-470-2		Hor	Air	6-5x4	471.0	7.00	146	10.26	(1)	1	1	In	225	2600	SL	265	2600			100/130	D	474	1.89	1-Ben	PI	Scin	DR	EM	37.73	30.77	33.62		
FSO-470-A		Hor	Air	6-5x4	471.0	6.00	146	10.13	(1)	1	1	In	260	3000	SL	260	3000	210	3000	91/96	D	514	1.98	1-Ben	PI	Scin	DR	EM	38.04	34.64	33.62		
E-225-4	267	Hor	Air	6-5x4	471.0	7.00	143		(1)	1	1	In	225	2650	SL	225	2650	175	2400	80/87	D	347	1.84	1-Ben	PI	Scin	Ecl	EM	46.66	22.30	33.41		
O-470-E	273	Hor	Air	6-5x4	471.0	7.00	146	N	(1)	1	1	In	225	2600	SL	225	2600			80/87	D	390	1.73	1-Ben	PI	Scin	DR	EM	43.31	19.62	33.32		
O-300-A	263	Hor	Air	6-4⅛x3½	301.0	7.00	141	N	(1)	1	1	In	145	2700	SL	145	2700			80/87	D	277	1.91	1-MS	FL	Scin	DR	EM	35.38	23.25	31.38		
GSO-526		Hor	Air	6-5½x4½	526.0	6.00	151	12.00	(1)	1	1	In	300	3000	SL	320	3000			91/96	.688	540	1.80	1-Ben	PI	Scin	DR	EM	52.28	23.86	34.68		
GO-526		Hor	Air	6-5½x4½	526.0	7.00	148	N	(1)	1	1	In	255	2600	SL	290	3200			80/87	.688	408	1.60	1-Ben	PI	Scin	DR	EM	49.12	23.00	34.68		
O-526		Hor	Air	6-5½x4½	526.0	7.00	147	N	(1)	1	1	In	225	2300	SL	226	2300			80/86	D	426	1.90	1-MS	FL	Scin	DR	EM	36.03	27.75	34.64		
Franklin																																		
4A4-100-B3	239	Hor	Air	4-4⅛x3½	225.0	7.00	138	N	(2)	1	1	In	100	2600	SL			75	2370	80	D	214	2.14	1-MS	FL	Eis	AL	EM	30.68	20.59	30.81	12⅛	
6A4-150-B3	238	Hor	Air	6-4⅛x3½	335.0	7.00	138	N	(2)	1	1	In	150	2600	SL			113	2370	80	D	291	1.94	1-MS	FL	Eis	DR	EM	37.37	22.88	30.81	13½	
6V4-170-B3	244	Ver	Air	6-4⅛x3½	335.0	7.00	140	N	(2)	1	1	In	170	3000	SL					80	D	294	1.85	1-MS	FL	Scin	DR	EM	36.00	26.81	30.81		
6V4-185-B3F	244	Ver	Air†	6-4⅛x3½	335.0	7.00	139	N	(2)	1	1	In	185	3000	SL					82	D	339	2.05	1-Str	FL	Scin	DR	EM	40.62	29.81	30.81		
6A4-165-B3	239	Hor	Air	6-4⅛x3½	335.0	7.00	139	N	(2)	1	1	In	165	2800	SL			124	2850	80	D	307	1.86	1-MS	PI	Scin	DR	EM	37.37	25.31	30.81	13½	
6A4-165-B3	239	Hor	Air	6-4⅛x3½	335.0	7.00	139	N	(2)	1	1	In	200	3100	SL					91	D	306	1.53	1-BM	P-FL	Scin	DR	EM	26.81	36.00	30.81		
6V4-200-C32, C33	244	Ver	Air	6-4⅛x3½	335.0	8.50	152	N	(2)	1	1	In	190	3100	SL					80	.632	324	1.11	1-BM	P-FL	Scin	DR	EM	40.59	29.12	30.81		
6AG4-190-B13	239	Hor	Air	6-4⅛x3½	335.0	7.00	141	N	(2)	1	1	In	245	3275	SL	245	3275	184	3275	80	D	353	1.44	1-Str	PI	Eis	Opt	EM	33.62	30.93	33.75		
6V6-245-B16F	256	Ver	Air†	6-4⅝x4	425.0	7.50	139	N	(2)	1	1	In	240	3200	SL	245	3300	180	2900	80	.623	406	1.69	1-Str	PI	Scin	Opt	EM	47.06	35.69	33.31		
6AG6-245-B		Hor	Air	6-4⅝x4	425.0	7.40	138	N	(2)	1	1	In																						
Jacobs																																		
R-755A	237	Rad	Air	7-5¼x5	757.0	6.00	143	N	(1)	1	1	In	300	2200	SL	300	2200	178	1900	80	D	506	1.66	1-Str	FL	Scin	Ecl	EM	39.50	44.00			16.50
R-755B	237	Rad	Air	7-5¼x5	757.0	6.00	131	N	(1)	1	1	In	275	2200	SL	275	2200	160	1900	80	D	480	1.72	1-Str	FL	Scin	Ecl	EM	39.50	44.00			16.50
*R-755EH		Rad	Air	7-5¼x6	757.0	6.50	146	N	(1)	1	1	In	350	2500	SL	350	2600	200	2000	91	.649	600	1.71	1-Str	FL	Scin	Ecl	EM	39.50	44.00			16.50
R-755-9	121	Rad	Air	7-5¼x6	757.0	6.40	117	N	(1)	1	1	In	225	2000	SL	245	2200	160	1900	80	D	471	2.09	1-Str	FL	Scin	Ecl	EM	39.50	44.00			16.50
Lycoming																																		
O-235-C1	223	Hor	Air	4-4⅝x3½	233.3	6.75	141	N	(1)	1	1	In	108	2600	SL	115	2800	81	2380	80	D	267	1.92	1-MS	FL	Scin	DR	EM	29.56	22.53	32.00		
O-290-D2B	229	Hor	Air	4-4⅞x3½	288.0	7.00	137	N	(1)	1	1	In	135	2600	SL	140	2800	100	2350	80/87	D	236	1.75	1-MS	FL	Scin	DR	EM	29.56	22.81	32.24		(a)
O-320	274	Hor	Air	4-5⅛x3½	319.8	7.00	138	N	(1)	1	1	In	150	2700	SL	150	2700	112	2450	80/87	D	244	1.62	1-MS	FL	Scin	DR	EM	29.40	23.12	32.24		(a)
O-340-A1A		Hor	Air	6-4⅛x3½	340.4	8.40	148	N	(1)	1	1	In	170	2700	SL	170	2700	127	2450	91/96	D	260	1.47	1-MS	FL	Scin	DR	EM	29.56	24.68	32.56		(a)
O-435-A	228	Hor	Air	6-4⅞x3½	434.0	6.50	148	N	(1)	1	1	In	190	2550	SL	190	2550	143	2310	80	D	364	1.91	1-MS	FL	Scin	DR	EM	30.10	29.61	32.24		(b)
O-435-K1	228	Hor	Air	6-4⅞x3½	434.0	7.30	143	N	(1)	1	1	In	250	3200	SL	260	3400	200	3200	80/87	D	380	1.82	1-MS	FL	Scin	Opt	EM	38.53	29.89	33.12		(b)
GO-435-C2B	228	Hor	Air	6-4⅞x3½	434.0	7.30	146	N	(1)	1	1	In	240	3000	SL	260	3400	180	2750	80/87	.642	430	1.79	1-Str	PI	Scin	Opt	EM	40.04	29.40	33.12		(c)
VO-435-A1A	270	Ver	Air	6-4⅞x3½	434.0	7.30	146	N	(1)	1	1	In	250	3200	SL	260	3400	200	3200	80/87	D	396	1.59	1-MS	FL	Scin	Opt	EM	38.17	23.61	33.32		
GO-435-D1	228	Hor	Air	6-4⅞x3½	434.0	7.30	146	N	(1)	1	1	In	240	3000	SL	260	3400	180	2750	80/87	.642	458	1.91	1-Str	PI	Scin	Opt	EM	41.28	26.34	33.12		(c)
GO-480-A1A	275	Hor	Air	6-5⅛x3½	479.7	7.30	143	N	(1)	1	1	In	260	3000	SL	280	3400	195	2750	80/87	.642	432	1.66	1-Str	PI	Scin	Opt	EM	38.64	34.43	33.12		(c)
GO-480-B	275	Hor	Air	6-5⅛x3½	479.7	7.30	143	N	(1)	1	1	In	260	3000	SL	270	3400	195	2750	80/87	.642	426	1.64	1-Str	PI	Scin	Opt	EM	38.64	29.40	33.12		(c)
GO-480-F6	275	Hor	Air	6-5⅛x3½	479.7	7.30	142	N	(1)	1	1	In	265	3100	SL	275	3400	200	2800	80/87	.642	431	1.63	1-Str	PI	Scin	Opt	EM	42.16	28.02	33.12		(c)
SO-480-A1A		Hor	Air	6-5⅛x3½	479.7	7.30	168	11.27	(1)	1	1	In	325	3200	5500	325	3200	260	3200	100/130	D	444	1.37	1-Str	PI	Scin	Opt	EM	38.53	22.73	33.12		(c)
GSO-480-A1A		Hor	Air	6-5⅛x3½	479.7	7.30	164	11.27	(1)	1	1	In	280	3000	9300	340	3400	210	2750	100/130	.642	500	1.79	1-Str	PI	Scin	Opt	EM	46.22	22.73	33.12		(c)

	GSO-880-C	256	Hor	Air	6-4⅞x3⅞	578.0	7.30	146	7.91	(1)	1	1	In	320	3000	7000	375	3300	280	2750	91/98	.642	592	1.85	1-Str	PI	Scin	Opt	EM	56.66	30.75	33.18			(c)
	SO-580-D		Hor	Air	6-4⅞x3⅞	578.0	7.30	160	7.91	(1)	1	1	In	350	3000	5000	400	3300	280	3000	100/130	D	560	1.80	1-Str	PI	Scin	Opt		49.20	30.75	33.18			(c)
	GSO-580-D	256	Hor	Air	6-4⅞x3⅞	578.0	7.30	160	7.91	(1)	1	1	In	350	3000	5000	400	3300	280	2750	100/130	.642	608	1.73	1-Str	PI	Scin	Opt	EM	56.66	34.22	33.18			(c)
Pratt & Whitney	*D5	230	Rad	Air	14-5¼x5½	2004.0		186						1200	2550	6400	1450	2700			100/130	.500	1585	1.32	1-Str	PI	Scin				59.66	49.10			
	*2SD13-G	230	Rad	Air	14-5¼x5½	2004.0		186						1200	2550	5000	1450	2700			100/130	.500	1605	1.34	1-Str	PI	Scin				59.66	49.10			
	*2SD13-G	230	Rad	Air	14-5¼x5½	2004.0		170						1100	2550	14000	1450	2700			100/130	.500	1605	1.46	1-Str	PI	Scin				78.40	52.00			
	*CA3	231	Rad	Air	18-5¼x6	2804.6		196						1800	2600	6000	•2400	2800	1900	2600	100/130	.450	*2317	1.29	1-Str	PI	Scin				78.40	52.00			
	*CA3	231	Rad	Air	18-5¼x6	2804.0		196						1800	2600	6000	2100	2800	1900	2600	100/130	.450	*2317	1.29	1-Str	PI	Scin				78.40	52.00			
	*CA15	231	Rad	Air	18-5¼x6	2804.0		196						1800	2600	6000	•2400	2800	1900	2600	100/130	.450	*2350	1.31	1-Str	PI	Scin				78.40	52.00			
	*CA15	231	Rad	Air	18-5¼x6	2804.0		174						1600	2600	16000	2100	2800	1900	2600	100/130	.450	*2350	1.47	1-Str	PI	Scin				78.40	52.00			
	*CA16	231	Rad	Air	18-5¼x6	2804.0		196						1600	2600	6000	•2400	2800	1900	2600	100/130	.450	*2350	1.31	1-Str	PI	Scin				78.40	52.00			
	*CA16	231	Rad	Air	18-5¼x6	2804.0		174						1600	2600	14500	2100	2800	1675	2600	100/130	.450	*2350	1.47	1-Str	PI	Scin				78.40	52.00			
	*CA18	231	Rad	Air	18-5¼x6	2804.0		174						1600	2600	14500	•1900	2600	1675	2600	100/130	.450	*2350	1.47	1-Str	PI	Scin				78.40	52.00			
	*CA18	231	Rad	Air	18-5¼x6	2804.0		174						1600	2600	8500	•2400	2800	1600	2600	100/130	.450	*2357	1.31	1-Str	PI	Scin				81.40	52.00			
	*CB3	264	Rad	Air	18-5¼x6	2804.0		196						1800	2600	8500	•2400	2800	1800	2600	100/130	.450	*2357	1.31	1-Str	PI	Scin				81.40	52.00			
	*CB3	264	Rad	Air	18-5¼x6	2804.0		196						1800	2600	8500	2050	2700	1800	2600	100/130	.450	*2357	1.31	1-Str	PI	Scin				81.40	52.00			
	*CB4	264	Rad	Air	18-5¼x6	2804.0		196						1800	2600	8500	•2500	2800	1900	2600	108/135	.450	*2357	1.31	1-Str	PI	Scin				81.40	52.00			
	*CB4	264	Rad	Air	18-5¼x6	2804.0		196						1800	2600	8500	2200	2800	1900	2600	108/135	.450	*2357	1.31	1-Str	PI	Scin				81.40	52.00			
	*CB16	264	Rad	Air	18-5¼x6	2804.0		196						1800	2600	6500	•2400	2800	1800	2600	100/130	.450	*2390	1.33	1-Str	PI	Scin				81.40	52.00			
	*CB16	264	Rad	Air	18-5¼x6	2804.0		174						1600	2600	16000	2050	2700	1700	2600	100/130	.450	*2390	1.49	1-Str	PI	Scin				81.40	52.00			
	*CB16	264	Rad	Air	18-5¼x6	2804.0		174						1600	2600	16000	•1850	2600	1700	2600	100/130	.450	*2390	1.49	1-Str	PI	Scin				81.40	52.00			
	*CB16	264	Rad	Air	18-5¼x6	2804.0		196						1800	2600	8500	•2500	2800	1900	2600	108/135	.450	*2390	1.33	1-Str	PI	Scin				81.40	52.00			
	*CB17	264	Rad	Air	18-5¼x6	2804.0		196						1700	2600	14500	2200	2900	1750	2600	108/135	.450	*2390	1.41	1-Str	PI	Scin				81.40	52.00			
	*CB17	264	Rad	Air	18-5¼x6	2804.0		185						1700	2600	14500	•1900	2500	1750	2600	108/135	.450	*2390	1.41	1-Str	PI	Scin				96.80	56.00			
	*CB2	247	Rad	Air	28-5¼x6	4363.0		189						2650	2550	6500	•3500	2700	2800	2550	108/135	.375	*3570	1.38	1-Str	PI	Scin				96.80	56.00			
	*CB2	247	Rad	Air	28-5¼x6	4363.0		189						2550	2550	6500	3250	2700	2800	2550	108/135	.375	*3570	1.38	1-Str	PI	Scin								
Wright	957C7BA1	261	Rad	Air	7-6⅛x6⅛	1301.0	6.20	176	7.21	(1)	1	1	In	700	2400	7300	800	2600	490	2200	91/98	.5625	1055	1.51	1-Str	PI	Boo	Opt	EM	48.12	50.45				32.75
	988C9HE1	299	Rad	Air	9-6⅛x6⅛	1823.0	6.80	222	7.21	(1)	1	1	In	1275	2500	3500	1475	2800	690	2400	100/130	.5625	1390	1.09	1-Str	PI	Boo	Opt	EM	48.80	54.95				32.75
			Rad	Air	9-6⅛x6⅛	1823.0	6.80	222	7.21	(1)	1	1	In	1275	2500	3500	•1525	2800	690	2400	100/130	.4475	1460	1.15	1-Str	PI	Scin	Opt	EM	50.07	55.75				32.75
	979C9HE1				(2-Speed Blower Engine)			195	8.68					1125	2500	10900	1250	2700	785	2400																
	979C18CB1	270	Rad	Air	18-6⅛x5½	3350.0	6.70	218	8.46	(1)	1	1	In	2400	2800	6300	2800	2900	1600	2400	115/145	.4375	3085	1.23	1-Str	PI	Scin	Opt	EM	78.47	58.89				40.75
					(2-Speed Blower Engine)			182	8.67					2000	2800	16000			1500	2400																
	972TC18DA1	272	Rad	Air	18-6⅛x5½	3350.0	6.70	240	8.46	(1)	1	1	In	2650	2800	6500	3250	2900	1910	2400	115/145	.4375	3581	1.34	1-Str	PI	Scin	Opt	EM	89.53	86.89				41.00
					(2-Speed Blower Engine)			222	8.67					2450	2600	17900	2550	2600	1800	2400																
	DA2		Rad	Air	18-6⅛x6⅛	3350.0	6.70	240	8.46	(1)	1	1	In	2650	2800	6500	3250	2900	1910	2400	115/145	.4375	3543	1.34	1-Str	PI	Scin	Opt	EM	89.53	86.89				41.00
					(2-Speed Blower Engine)			222	8.67					2450	2600	17900	2550	2600	1800	2400																
	DA3		Rad	Air	18-6⅛x6⅛	3350.0	6.70	249	8.46	(1)	1	1	In	2750	2800	6500	3250	2900	1910	2400	115/145	.4375	3657	1.29	1-Str	PI	Scin	Opt	EM	89.53	86.89				41.00
					(2-Speed Blower Engine)			222	8.67					2450	2600	17900	2550	2600	1800	2400																
	DA4		Rad	Air	18-6⅛x6⅛	3350.0	6.70	259	8.46	(1)	1	1	In	2850	2800	4300	3400	2900	1910	2400	115/145	.4375	3809	1.27	1-Str	PI	Scin	Opt	EM	89.53	86.89				41.00
					(2-Speed Blower Engine)			222	8.67					2450	2600	17900	2550	2600	1800	2400																
	488TC18EA1		Rad	Air	18-6⅛x6⅛	3350.0	6.70	259	8.46	(1)	1	1	In	2850	2800	4300	3400	2900	1910	2400	115/145	.4375	3809	1.27	1-Str	PI	Scin	Opt	EM	89.53	86.89				41.00
					(2-Speed Blower Engine)			222	8.67					2450	2600	17900	2550	2600	1800	2400																
	982C9HE1		Rad	Air	9-6⅛x6⅛	1823.0	6.80	222	7.21	(1)	1	1	In	1275	2500	3500	•1525	2800	690	2400	100/130	.5625	1469	1.15	1-Str	PI	Scin	Opt	EM	50.07	55.75				32.75

ABBREVIATIONS

*—Helicopter engine with vertical crankshaft.
†—Cooled by fan.
1—Single stage.
2—Two speed.
•—Power rating with water injection.

^—Weight includes an engine torquemeter.
*—Single speed.
(1)—Steel with aluminum head.
(2)—Aluminum with cast iron sleeves.
(a)—A rear type mounting is provided by four mounting bosses integral with crankcase.
(b)—A rear type mounting is provided by five mounting bosses, four of which are integral with the crankcase sections and the remaining boss is located at the rear of the oil pump.
(c)—A longitudinal type mounting is provided by four mounting bosses integral with the crankcase.

AL—Electric Auto-Lite Co.
Ben—Bendix Aviation Corp.
BM—Bendix or Marvel-Schebler.
Boe—American Bosch Corp.
D—Direct.
DR—Delco-Remy Div.
Ecl—Eclipse Pioneer Div.
Eis—Eisoman Corp.
EA—Electric motor
FL—Flent.
Hor—Horizontally opposed.
In—In head with push rods and rocker arms.
MS—Marvel-Schebler Carburetor Div.
N—No or none.
Opt—Optional.
P-FL—Pressure injection or float.
PI—Pressure injection.
Rad—Radial
Scin—Scintilla Magneto Div.
Sev—Several.
SL—Sea level
Str—Stromberg-Elmira Div.
Ver—Vertically opposed.

For Directory of the Engine Manufacturers listed above, see page 263

Value of Shipments of Aircraft Propellers and Other Products of Their Plants

Based on data from Industry Division, Bureau of the Census

	Value of All Products	Total	Aircraft Propellers and Parts						Other Products and Services	Propellers for Civil Aircraft
			For Military Aircraft			For Civilian Aircraft				
			Total	Propellers	Parts	Total	Propellers	Parts		
1954 (Jan.-June)	$ 90,894,000	$ 83,296,000	$ 74,625,000	$ 35,140,000	$ 39,685,000	$ 9,101,000	$ 4,734,000	$ 4,367,000	$ 15,168,000	4,795
1953	213,425,000	188,029,000	169,846,000	100,043,000	69,802,000	19,184,000	10,888,000	8,525,000	25,396,000	9,941
1952	155,348,000	139,344,000	119,746,000	(d)	(d)	19,598,000	10,951,000	8,647,000	16,004,000	10,951
1951	113,104,000	100,089,000	81,195,000	(d)	(d)	18,894,000	9,681,000	9,033,000	13,015,000	10,504

(d)—Not shown separately to avoid disclosing figures of individual companies.

AIRCRAFT GAS TURBINES 1955

U. S. AND BRITISH ★ ★ ★ ★ ★

Line Number	MAKE AND MODEL	ENGINE TYPE: Turbo-jet or Prop.	ENGINE TYPE: Single or Coupled	PERFORMANCE: TAKE-OFF: Thrust (Lb.)	TAKE-OFF: Prop. Shaft (Hp.)	TAKE-OFF: RPM	TAKE-OFF: Fuel Consumption	NORMAL: Thrust (Lb.)	NORMAL: Prop. Shaft (Hp.)	NORMAL: RPM	NORMAL: Fuel Consumption	MAX. CRUISING: Thrust (Lb.)	MAX. CRUISING: Prop. Shaft (Hp.)	MAX. CRUISING: RPM	MAX. CRUISING: Fuel Consumption	Propeller Gearing Type	COMPRESSOR: Type	COMPRESSOR: No. of Stages	COMPRESSOR: Pressure Comp. Ratio	COMPRESSOR: Blade Root	TURBINE: No. of Stages	TURBINE: Blade Roots
	UNITED STATES																						
1	Allison...T-33, T-40, T-54, T-56	TP						Data	Restricted														
2	J33-A-35	TJ	S	4600	None	11750	1.14‡	3900	None	11250	1.12‡		None			N	Ce	D1	4.00				
3	J33-A-37	TJ	S	4600	None	11750	1.14‡	4600	None	11750	1.14‡					N	Ce	D1	4.00				
4	J35-A-35	TJ	S		None	8080	2.25‡	4050	None		1.09‡		None			N	A	11	5.20	Do			
5	J-71	TJ	S					Data	Restricted														
6	J33-A-16A	TJ	S	6050	None	11000	25.00‡	5250	None	11250	1.06‡		None			N	Ce	D1	4.00				
7	J35-A-29	TJ	S	5600	None		1.07‡	4900	None		1.05‡		None			N	A	11	5.20	Do			
8	Boeing...502-2	TP	S		279			175	36000		1.30†					P	Ce	1	3.15	In	2	W	
9	500	TJ*	S	165			1.37	170			1.35						Ce	1	3.15	In	1	W	
10	502-6	TP	S		210	37500			175	36500	1.30†						Ce	1	3.15	In	2	W	
11	502-6 Twin	TP	C		420	37500			350	36500	1.30†						Ce	1	3.15	In	2	W	
12	502-7	AS	S					140*			1.71‡						Ce	1	3.15	In	2	W	
13	502-8	TP	S		210	37500			175	36000	1.30†					P	Ce	1	3.15	In	2	W	
14	502-10	TP	S		270	37500	1.00		240	36500	1.02					P	Ce	1	4.10	In	2	W	
15	502-11	AS	S						210*		1.17‡						Ce	1	4.10	In	2		
16	Cont'l. XT-51-7-1 (Artouste I)	TP	S		200	38000	.97‡		230	38000	1.07					SpG	Ce	1	3.60		2		
17	XT-51-7-3 (Artouste II)	TP			425	34000	.98‡									SpG	Ce	1	3.60	In	2		
18	Model 320 (Palas)	TJ	S	350		34000	1.18‡	250		31000	1.10						Ce	1	3.00		1		
19	Model 420 (Aspin II)	DuF	S	700		35000	.86‡	660		35000	.82						Ce	1	3.00		2		
20	XT-51-7-5 (Artouste 200)	TP	S		480	35000	1.00*		335	33000	1.10‡					N	Ce	1	3.90	In			
21	XJ69-T-9	TJ		920		22700	1.13‡	720		21000	1.06‡						Ce	1	3.90	In			
22	XJ69-T-19	TJ		1060		28050	1.20‡	790		19500	1.12‡						Ce	1	3.90	In			
23	Fairchild...J-44	TJ	S	1080	N	16700			N				N			N	M	1	2.50	In	1	W	
24	General Electric...J47-C	TJ	S	6200*		7950	1.13	4730		7630	1.04	3700		7000	1.03		A	12	5.05	Do	1		
25	J47-17	TJ	S	5425		7950	1.16	4480		7750	1.12	3730		7340	1.11		A	12	5.45	Do	1		
26	J47-23	TJ	S	5800		7950	1.09	4710		7300	1.02	3920		6960	1.01		A	12	5.35	Do	1		
27	J-73	TJ						Data	Restricted														
28	J47-25	TJ	S	5970		7950	1.07	4705		7300	1.01	3990		6960	1.01		A	12	5.35	Do	1		
29	J47-27	TJ	S	5970		7950	1.07	4705		7300	1.01	3990		6960	1.01		A	12	5.35	Do	1		
30	J47-2	TJ	S	6000		7950	1.07	4810		7300	1.01	4010		6960	1.01		A	12	5.35	Do	1		
31	J47-33	TJ	S	5650		7950	1.16	4540			1.11						A	12	5.45	Do	1		
32	J47-17B	TJ	S	5425		7950	1.16	4480			1.11						A	12	5.45	Do	1		
33	Pratt & Whitney...J-48	TJ	S	6250	N		1.09‡		N				N			N	Co	1			1		
34	T-34	TP	S		5700*		.62†										A	13			3		
35	J-57	TJ	S						Data	Restricted							A						
36	JT-7H	TJ	S	7250			1.14‡	5900			1.12‡	3750			1.14‡		Co	1			1		
37	Westinghouse...J-34-WE-22	TJ	S	2000	N	12500	1.05‡	2290	N				N			N	A	11		BR	2	FT	
38	J-34-WE-34	TJ	S	3250	N	12500	1.05‡	2550			1.05‡						A	11	3.85	BR	2	FT	
39	J-34-WE-36	TJ	S	3400	N	12550	1.04‡				1.03‡						A	11	4.35	BR	2	FT	
40	J-40-WE-8	TJ															A						
41	J-40-WE-8	TJ															A						
42	J-30-WE-20	TJ		1650		17000	1.18‡				1.18‡								3.80				
43	J-46-WE-8	TJ						Data	Restricted														
44	Wright...J-65	TJ	S	7220	N	8300	.92‡	6400	N	8000			N			N	A	13		FT	2	FT	
45	J-67	TJ		7900					Data	Restricted													
46	YT49-W-1	TP							Data	Restricted													
	GREAT BRITAIN																						
47	Armstrong Siddely M'ba ASM6	TP	S															7					
48	Double Mamba ASMD1	TP	C	810	2540	15000	.75	740	2165	14500	.97					P	A	10	5.00	FT	2	FT	
49	Double Mamba ASMD3	TP	C	995		13400	.75																
50	Double Mamba ASMD4	TP	C																				
51	Python ASP3	TP	S	1100	3670	9000	.81	1100	3230	7950	.83	1060	2920	7950	.85	P	A	14	5.00	Do	2	FT	
52	Sapphire ASSa6	TJ	S	6500	N		.99									N	A						
53	Sapphire ASSa7	TJ	S		N											N	A						
54	Viper ASV3	TJ	S	1640	N	13400	1.09	1540	N	13100	1.10	1400	N	12700	1.10	N	A	7	3.50	CL	1	FT	
55	Viper ASV5	TJ	S	1640	N	13400	1.09	1540	N	13100	1.10	1400	N	12700	1.10	N	A	7	3.50	CL	1	FT	
56	Viper ASV6	TJ	S	1900	N	13400	1.15									N	A	7	3.70	CL	1	FT	
57	Viper ASV7R	TJ	S	2470	N	13400	2.26	940	N	13400	1.09					N	A	7	3.70	CL	1	FT	
58	Mamba ASM3	TP	S	405	1320	18000	.90	355	1050	14500	.97					P	A	10	5.00	CL	2	FT	
59	Blackburn...Palas 600	TJ	S	350		35000	1.20‡	340		33000	1.14‡	305		34000	1.17‡		Ce	1	4.12	In	1	In	
60	Palouste 500	AS	S														Ce	1		In	2	In	
61	Turmo 500	TP	S		335		.92†		295		.94†					SpG	Ce	1	4.19	In	2	In	
62	Turmo 600	TP	S		450		1.04†		400		1.07†		594			SpG	Ce	1	4.12	In	2	In	
63	Coupled Turmo	TP	C		900		1.04†		800		1.07†				1.05†	SpG	Ce	1	4.12	In	2	In	
64	Artouste 500	TP	S		345		.89†		305		.93†					SpG	Ce	1	4.19	In	2	In	
65	Artouste 600	TP	S		475		.99†		415		1.03†					SpG	Ce	1	4.12	In	2	In	
66	Marboré	TJ	S	882		22900	1.15‡	705		21000	1.07‡						Ce	1	3.90	In	1	In	
67	Bristol...Olympus	TJ	S	9750			.77‡										A						
68	700 Proteus	TP	S	1290	3320	12000	.62†					1100	2920	11700	.94†		AC	12*1	7.20	FT	4	FT	
69	705		S	1320	3650	12000	.62					1210	3210	12300	.94								
70	BE26	TP	S																				
71	Orpheus	TJ																					

For abbreviations and references see pages 230 and 231

For directory of the Turbine Manufacturers listed above, see page 263

★ ★ ★ ★ ★ U. S. AND BRITISH

COMBUSTION CHAMBERS				FUEL SYSTEM						IGNITION SYSTEM			LUBRICATION		MAKE OF COMPONENT PARTS					OVERALL DIMENSIONS			DRY WEIGHT		
Arrangement	No. Used	Material	Air Intake	No. of Pumps	No. of Emergency Pumps	Fuel Controls	Afterburning	Recommended Octane Rating of Fuel	No. Fuel Nozzles per Combustion Chamber	No. of Igniters	Type of Igniter	Sump Capacity (Pts.)	Max. Oil Consumption (Pts./Hr.)	Starter	Generator	Governor	Vacuum Pump	Fuel Pumps	Length (In.) With Extension Pipe	Length (In.) Without Extension Pipe	Max. Diameter (In.)	With Component Parts (Lb.)	Without Component Parts (Lb.)	Line Number
UNITED STATES																									
											Data	Restricted													
Cy	14	SS		1	(a)	M	N	JP-4	1	2	Sp	24.0	1.0[g]	Gov	Gov	Ben		Pos		107.0	50.5	1535		
Cy	14	SS	DF	1	N	M	N	JP-4	1	2	Sp	24.0	1.0[g]	Gov	G-D	Ben		Pos		159.5	48.8	2530		
An	8	SS	DF	1	(a)	M	Y	JP-4	1	2	Sp	Dry	3.0[g]	G-D	G-D	Ben	None	Th		186.5	48.0[g]	2530	2080	
											Data	Restricted													
An	14	SS		1	(a)	M	Y	JP-4	1	2	Sp	24.0		Gov	Gov	Ben		Pos	99.3		49.8		1920	
An	11	SS	DF	1	N	M	N	JP-4	1	2	Sp	Dry	3.0[g]	G-D	G-D	Ben	None	Pos		146.0	36.0[g]	2384	2305	
Cy	2	SS	DF	1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var				39.9		23.2		238	
Cy	2	SS		1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var				31.7		22.2		120	
Cy	2	SS		1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var				40.0		24.0		280	
Cy	2	SS	DF	1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var								500	
Cy	2	SS	DF	2			N	G,De,K,JP-4	1	2	SG	16	No	Var	Var				45.2		31.4		314	
Cy	2	SS	DF	1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var				46.8		23.2		277	
Cy	2	SS	DF	1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var				41.8		22.7		245	
Cy	2	SS	DF	1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var				46.5		31.5		360	
Cy	2	SS	DF	1		M	N	G,De,K,JP-4	1	2	SG	8	No	Var	Var									
An	1		Ra	1			N	G,K,JP-4		2	Sp								31.6	23.0	20.5	215	205	
An	1		Ra	1		M	N	G,K,JP-4		2	Sp		0.5							44.3	23.2	290	236	
An	1		A	1			N	G,K,JP-4		2	Sp								41.6		16.0		137	
An	1		A	1			N	G,K,JP-4		2	Sp								47.7		28.9		315	
An	1		A	1			N	G,K,JP-4		2	Sp								47.0		16.5	315	300	
An	1		DF	1	N	M	N			2	Sp		0.5							50.5	22.3	360	333	
An	1		A				N	G,K,JP-4		2	Sp		0.2	Br	Br					43.3	22.3	349	300	
An	1		A	1		M	N	G,K,JP-4		2	Sp		0.5	Br	Br	Own		Own						
An	1	SS	DF	1	N	E	N	G,JP	12	1	Sp	N	No					Pos	38.4	75.4	22.0	305		
Cy		IC	DF	1	1(b)	M-H	N	JP-1,3,4††	1	2			2.0[g]						144.0		36.8	2500		
Cy		IC	DF	3	(a)	E	Y	JP-1,3,4††	1	2			2.0[g]						228.0		36.8	3263		
Cy		IC	DF	1	N	M-H	N	JP-1,3,4††	1	2			2.0[g]						146.0		39.5	2516		
Cy		IC	DF	1	N	M-H	N	JP-1,2,3††	1	2			2.0[g]						146.0		39.5	2864		
Cy		IC	DF	1	N	M-H	N	JP-1,2,3††	1	2			2.0[g]						146.0		39.5	2907		
Cy		IC	DF	1	(a)	M-H	N	JP-1,2,3††	1	2			2.0[g]						146.0		39.5	2572		
Cy		IC	DF	1	N	M-H	N	JP-1,2,3††	1	2			2.0[g]						228.0		36.8	3196		
Cy		IC	DF	3	(a)	E	Y	JP-1,2,3††	1	2			2.0[g]						228.0		36.8	3196		
Cy		IC	DF	3	(a)	E	Y	JP-1,2,3††	1	2			2.0[g]											
Cy	9						Y												106.7		50.0	2000		
An																			156.8		34.1	2540		
								MIL-F-5161B												109.0	50.5	2080		
DA	1	SS	DF	1	1		N	AN-F-48	60	2	Sp	Dry		Own		Hol		Hol	120.0		24.0	1290		
DA	1	SS	DF	1	1		N		60	2	Sp	Dry		Own		Hol		Hol	120.0		24.0	1233		
DA	1	SS	DF	1	1		N		60	2	Sp	Dry		Own		Hol		Hol	111.4		34.7	1207		
																			186.0		40.0	3000		
							Y													388.0	40.0	3500		
																			101.0		26.0	705		
											Data	Restricted									36.0	2100		
An	1	SS	DF	2	N	I			36	2				GE	GE	Th		Th	130.0		37.3	2696	2506	
											Data	Restricted												
											Data	Restricted												
GREAT BRITAIN																									
																			65.5					
Cy	12	NS	DF	2	N	LU	N	AK,De	4	4	ASM	Sump	4.0	Rot	N	Dow	N	Dow	98.7	79.8	**		2128	
								AK,De																
Cy	11	NS	RF	1	N	ASM	N	AK	4	2	ASM	Sump	2.0	BTH	N	LU	N	LU	112.7	86.6	54.5		3150	
An			DF					AK								Dow		Dow	133.9	107.0	30.3		2509	
An			DF					AK																
An			DF	1	N	LU	N	AK	24	2	KLG		1.7	AT	Rot	LU	N	LU	68.5	45.4	23.3		385	
An			DF	1	N	ASM	N	AK	24	2	KLG		1.7	Rot	Rot	LU	N	LU	65.8	45.4	28.0		465	
An		NS	DF	1	N	LU	N	AK,G	24	2	KLG			Own		LU	N	LU		65.8	25.0		380	
An		NS	DF	2	N	LU	N	AK,G	24	2	KLG					LU	N	LU		65.8	26.0		550	
Cy	6	NS	DF	1	N	LU	N	AK,De	4	2	KLG		2.0	O-R		LU	N	LU	87.3	65.3	31.0		700	
An	1	NS	DF	1	N	M	N		RI	1	T	8	0.5	Rot	Rot	LU	N	Pis	39.0	29.3	17.1	185	148	
An	1	NS	DF	1	N	M	N		RI	1	T	8	0.5	Rot	Rot	LU	N	Pis		28.5	18.5	207	176	
An	1	NS	DF	1	N	LU	N		RI	1	T	8	0.5	Rot	Rot	LU	N	Pis		46.1	17.1	310	282	
An	1	NS	DF	1	N	LU	N		RI	1	T	8	0.5	Rot	Rot	LU	N	Pis		46.1	17.1	310	282	
An	1	NS	DF	1	N	M	N		RI	2	T	16	1.0	Rot	Rot	LU	N	Pis		51.0	42.0	618	560	
An	2	NS	DF	2	N	LU	N		RI	1	T	8	0.5	Rot	Rot	LU	N	Pis		40.0	19.3	307	276	
An	1	NS	DF	1	N	LU	N		RI	1	T	8	0.5	Rot	Rot	LU	N	Pis		40.0	19.3	307	276	
An	1	NS	DF	1	N	LU	N		RI	1	T			Rot	Rot	LU	N	Pis		43.1	22.3		309	
																				124.0	40.0	3620		
Cy	8	NS	DF				N			2	Sp		2	Rot				LU		100.5	39.5	2510		
																						3400		

For abbreviations and references see pages 230 and 231

For Directory of the Turbine Manufacturers listed above, see page 267

AIRCRAFT GAS

Line Number	MAKE AND MODEL	ENGINE TYPE: Turbo-jet or Prop.	ENGINE TYPE: Single or Coupled	PERFORMANCE: TAKE-OFF: Thrust (Lb.)	TAKE-OFF: Prop. Shaft (Hp.)	TAKE-OFF: RPM	TAKE-OFF: Fuel Consumption	NORMAL: Thrust (Lb.)	NORMAL: Prop. Shaft (Hp.)	NORMAL: RPM	NORMAL: Fuel Consumption	MAX. CRUISING: Thrust (Lb.)	MAX. CRUISING: Prop. Shaft (Hp.)	MAX. CRUISING: RPM	MAX. CRUISING: Fuel Consumption	Propeller Gearing Type	COMPRESSOR: Type	COMPRESSOR: No. of Stages	COMPRESSOR: Pressure Comp. Ratio	COMPRESSOR: Blade Rot	TURBINE: No. of Stages	TURBINE: Blade Rots
	GREAT BRITAIN — concluded																					
72	de Havilland Gyron	TJ	S																			
73	Goblin 35	TJ	S	3500	N	16750	1.19‡	2320	N	9500	1.20‡	3000	N	10250	1.16‡	N	Ce	1	3.67	In	1	FT
74	Ghost 48, Mark 1 & 2	TJ	S	4650	N	10250	1.21‡	3440	N	9250	1.15‡	4100	N	9750	1.16‡	N	Ce	1	4.50	In	1	FT
75	Napier Nomad 2 NNm6	TP	C	220	3040	2050	.35†	145	2393	1900	.35†		2050	1450	.33†	SpG	A	12	8.25			
76	Eland	TP	S			12500	.62†			12000	.66†			11500	.69†	P	A	10	7.00	FT	3	FT
77	Eland NE11	TP		825	2600	12500	.62†	700	2070	12000	.66†	565	1665	11500	.69†	P	A	10	7.00	FT		
78	Rolls-Royce Derwent 8	TJ	S	3600	N	14700	1.05‡		N			3090	N	14100	1.03	N	Ce	1	4.50	In	1	FT
79	Nene 3, 102	TJ	S	5100	N	12500	1.06‡	4000	N	12200	1.04	4000	N	11800	1.02	N	Ce	1	4.50	In	1	FT
80	Dart 505	TP	S	365	1400	14500	.83†					295	1120	13800	.90	P	Ce	2	5.50	In	2	FT
81	Avon I	TJ	S	6500	N	7800	.88		N				N		.96	N	A					
82	Conway	TJ																				
83	Nene RN2 Mk 10	TJ		5100	N	12500	1.05‡	4000	N	11800	1.02‡	4000	N	12200	1.04‡		Ce	1	4.50			FT
84	Avon RA7 Mk 104, 5, 7, 9	TJ		7500	N		.92‡		N				N				A					
85	Avon RA7R Mk 108	TJ		9500	N				N				N				A					
86	Avon RA14 Mk 201	TJ		9500	N		.84‡		N				N				A					
87	Avon RA26 Mk 503			7000	N		.91‡		N				N				A					
88	Avon RA21 Mk 113	TJ		9150	N		.93‡		N				N				A					
89	Avon RA22 Mk 101	TJ		7150	N		.90‡		N				N				A					
90	Avon RA26 Mk 521			1300			.86‡										A					
91	Avon RA28 Mk 204			1000			.86‡										A					
92	Dart Mk 506	TP	S	365	1400	14500	.80†					295	1120	13800	.87†	P	Ce	2	5.50	In		
93	Dart Mk 510 (RDa6)	TP	S	365	1550	14500	.77†					295	1245	13800	.83†	P	Ce	2	5.50	In		
94	Soar RSr2 Mk 101			1810			1.26‡										A					

ABBREVIATIONS

‡—Lb/hr/lb thrust.
‡‡—Eng. RD2482.
†—Lb/hp/hr.
††—Mil-F-5572.
*—Loose on Mk 1; Dowty on Mk 2.
**—Width, 52.8; height, 44.3.
■■—Integral with pumps.
^—Plus.
●—Width.

•—Gas generator.
●—Lb/hr.
^—Air horse power.
♣—Lb/Air hp/hr.
(a)—Included in main pump.
(b)—Some J-47's have no emergency pumps.
A—Axial.
AC—Axial and centrifugal.
AG—Aviation gasoline.
AK—Aviation Kerosene.
An—Annular.
AS—Air supply.
AT—Air or turbine.
Ben—Bendix.
BN—B. T. H. or Newton.
Br—Breeze Corp.
BR—Ball rost.
C—Coupled.
Ce—Centrifugal.
CL—Clamped.
Cn—Cannular.
Cy—Cylindrical.
DA—Double annular.
De—Diesel fuel.
DE—Double entry.
DF—Direct flow.
DI—Dual entry impeller.
Do—Dovetail.
Dow—Dowty.
Du F—Ducted fan.
E—Integrated electronic.

For Directory of Gas Turbine Manufacturers listed above, see page 263

Value of New Orders and Net Sales of Complete Aircraft, Engines and Propellers

Based on data from the Industry Division, Bureau of the Census

All Figures in Millions of Dollars

Product	NEW ORDERS[1]: 1954: Third Quarter	1954: Second Quarter	1954: First Quarter	1953: Yearly Totals	1952: Yearly Totals	NET SALES: 1954: Third Quarter	1954: Second Quarter	1954: First Quarter	1953: Yearly Totals	1952: Yearly Totals
Complete Aircraft and Parts										
For U. S. military customers	$ 923	$ 541	$ 914	$ 5,176	$ 6,495	$ 1,112	$ 1,193	$ 1,088	$ 4,661	$ 3,451
Other customers	137	126	120	428	501	140	178	165	518	455
Total	$ 1,060	$ 667	$ 1,034	$ 5,604	$ 6,996	$ 1,252	$ 1,371	$ 1,253	$ 5,179	$ 3,906
Aircraft Engines and Parts										
For U. S. military customers	$ 322	$ 274	$ 6	$ 1,153	$ 3,079	$ 423	$ 494	$ 486	$ 2,189	$ 1,438
Other customers	34	26	39	144	169	40	42	43	189	170
Total	$ 356	$ 300	$ 45	$ 1,297	$ 3,248	$ 463	$ 536	$ 529	$ 2,378	$ 1,608
Aircraft Propellers and Parts										
For U. S. military customers	$ 29	$ 53	$ 21	$ 100	$ 176	$ 34	$ 42	$ 43	$ 176	$ 122
Other customers	9	10	5	19	29	7	8	8	27	26
Total	$ 37	$ 63	$ 26	$ 119	$ 205	$ 41	$ 50	$ 51	$ 203	$ 148
Other Products and Services	$ 113	$ 282	$ 256	$ 636	$ 1,033	$ 198	$ 209	$ 173	$ 751	$ 833
Total—All Products	$ 1,306	$ 1,312	$ 1,361	$ 7,656	$11,482	$ 1,994	$ 2,165	$ 2,006	$ 8,511	$ 6,495

1—New orders received during quarter or year, less terminations during the various quarters.

TURBINES—*concluded*

COMBUSTION CHAMBERS				FUEL SYSTEM						IGNITION SYSTEM		LUBRICATION		MAKE OF COMPONENT PARTS					OVERALL DIMENSIONS			DRY WEIGHT		
																			Length (In.)					
Arrangement	No. Used	Material	Air Intake	No. of Pumps	No. of Emergency Pumps	Fuel Controls	Afterburning	Recommended Octane Rating of Fuel	No. Fuel Nozzles per Combustion Chamber	No. of Igniters	Type of Igniter	Sump Capacity (Pts.)	Max. Oil Consumption (Pts./Hr.)	Starter	Generator	Governor	Vacuum Pump	Fuel Pumps	With Extension Pipe	Without Extension Pipe	Max. Diameter (In.)	With Component Parts (Lb.)	Without Component Parts (Lb.)	Line Number
GREAT BRITAIN—*concluded*																								
Cy	16	NS	DF	2			N	DED2482	1	2	Sp	10	2.0	Rot	RNB	Own	Pio	LU		100.5	49.9	1630		72
Cy	10	NS	DF	2			N	K,JP-4,DED2482	1	2		14	2.4	Rot	BN	"	Pio	LU		121.0	53.0	2120		74
	3			1		M		AK,De,G	1				2.2	Rot						109.6	56.5		3580	75
Cy	6	NS	DF	1		M		DERD2486	1	2	Sp		1.0	Rot		Rll		LU		122.0	38.1	1575		76
Cy	6	NS	DF	1		M	N		1	1	Sp	Dry	1.0	Rot		Rll		LU		122.0	36.1	1575		77
Cy	9	NS	DE	1	N	M	N	AK,G	1	2	SG	22	1.0	Rot	N		N	LU		83.1	43.0	1290		78
Cy	9	NS	DE	2	N	M	N	AK,G	1	2	Sp	9	1.0	Rot	N		N	LU		98.0	49.5	1621		79
Cy	7	NS	DF	1	N	M	N	AK	1	2	SG	25	1.0	Rot	N		N	LU		95.1	38.0	1030		80
	8												1.5							103.1	42.4	2240		81
																								82
Cy	9	NS	DE	2	N	M	N	AK,G	1	2	Sp	11	1.0	Rot				LU		104.8	49.5	1620		83
	8																			102.1	42.2		2460	84
	8																			117.8	42.2		2960	85
An																				113.3	41.5		2860	86
	8																			102.6	42.2		2440	87
	8																			102.1	42.2		2460	88
	8																			102.6	42.2		2242	89
An																				113.3	41.5		2790	90
An																				113.3	41.5		2900	91
Cy	7	NS	DF	1		M	N	JP-1,‡‡	1	2	Sp	23	1.0	Rot		Rll		LU		96.1	38.0	1044		92
Cy	7	NS	DF	1		M	N	JP-1,‡‡	1	1	Sp	25	1.0	Rot		Rll		LU		97.0	38.0	1107		93
An																				77.0	16.6		275	94

FT—Fir tree.
G—Gasoline.
GD—Generator drive.
G-D—Ge or Deleo.
GE—General Electric.
Gl—Glow.
Gov—Government furnished equipment.
Hol—Holley Carburetor Co.
Ic—Inconel.
In—Integral.
JH—Jack & Heints.
K—Kerosene.
LU—Lucas.
M—Mechanical.
M-H—Mechanical and hydraulic.
N—No or none.
Ne—Negligible.
NS—Nimonic sheet.
O-R—Own or Rotax.
P—Planetary.
Pes—Pesco.
Pio—Pinsey.
Ra—Radial.
RF—Reverse flow.
Rl—Rotary injector.
RNB—Rotax, Newton or B. T. H.
Rot—Rotax.
Rll—Rotol.
S—Single.
SG—Spark and glow.
Sp—Spark.
SpG—Spur gearing.
SP—Shaft power.
SS—Stainless steel.
T—Torch.
Th—Thompson Products.
TJ—Turbo-jet.
TP—Turbo-prop.
Var—Various.
W—Welded.
Y—Yes.

For Directory of Gas Turbine Manufacturers listed above, see page 263

Value of Backlog of Complete Aircraft, Engines and Propellers

Based on data from the Industry Division, Bureau of the Census

All Figures in Millions of Dollars

Product	QUARTERS ENDING— Sept. 30 1954	June 30 1954	Mar. 31 1954	Dec. 31 1953	Sept. 30 1953	June 30 1953	Mar. 31 1953	Dec. 31 1952	Sept. 30 1952
Complete Aircraft and Parts									
For U. S. military customers	$ 9,283	$10,012	$10,664	$10,846	$11,210	$11,614	$11,154	$10,367	$ 9,300
Other customers	664	667	719	764	734	761	821	855	827
Total	$10,407	$10,679	$11,383	$11,610	$11,944	$12,375	$11,975	$11,222	$10,127
Aircraft Engines and Parts									
For U. S. military customers	$ 3,144	$ 3,265	$ 3,465	$ 3,945	$ 5,033	$ 5,145	$ 5,138	$ 4,992	$ 4,441
Other customers	110	116	132	135	140	159	176	180	176
Total	$ 3,254	$ 3,381	$ 3,597	$ 4,080	$ 5,173	$ 5,304	$ 5,314	$ 5,172	$ 4,617
Aircraft Propellers and Parts									
For U. S. military customers	$ 174	$ 180	$ 169	$ 191	$ 234	$ 278	$ 276	$ 267	$ 277
Other customers	28	26	24	27	27	27	29	31	33
Total	$ 202	$ 206	$ 193	$ 218	$ 261	$ 305	$ 305	$ 298	$ 310
Other Products and Services	$ 916	$ 1,001	$ 927	$ 844	$ 879	$ 922	$ 889	$ 961	$ 947
Total—All Products	$14,889	$15,247	$16,100	$16,752	$18,257	$19,906	$18,483	$17,653	$16,000

CARDOX*

FIRE PROTECTION



CARDOX "Foam-Maker" Systems in action on Navy MB-1 crash fire truck. "Foam-Maker" Systems are specified for these trucks.

On the Field



USAF Model 06 Crash Fire Truck, designed and built by CARDOX, carries 2 tons of CARDOX Low Pressure Carbon Dioxide.

"Foam-Maker" Systems

A major new development for producing *better* foam in DELUGE QUANTITIES! Making foam in the pump—*not at the nozzle*—CARDOX "Foam-Maker" Systems deliver up to 3000 GPM or more of foam per minute.

CARDOX "Foam-Maker" Systems actually give foam improved fire extinguishing characteristics. Every gallon of water is turned into homogeneous, evenly dispersed foam. Pattern Range—from straight stream up to 180 feet long to solid conical discharge with an included angle of approximately 45° and 50-foot projection.

"Foam-Maker" Systems are fully engineered by CARDOX, ready to operate when tied into any suitable power source, on crash trucks or in fixed installations.

CARDOX also offers a complete line of foam, water and combination equipment, including hand line nozzles, proportioners, etc.



CARDOX "Foam-Maker" Systems include the "Foam-Maker" Pump, Turret Nozzle and all necessary valves, controls and accessories. The Systems are compact and relatively light in weight. Two foam capacity sizes, 1200 GPM and 3000 GPM.

*CARDOX LOW PRESSURE CARBON DIOXIDE SYSTEMS AND EQUIPMENT
Covered by U. S. and Foreign Patents Issued & Pending

Low Pressure Carbon Dioxide

The USAF Crash Fire Truck, Model 06, is one of the most effective and highly specialized in the world. Utilizing the lightning-quick punch of two tons of CARDOX Low Pressure Carbon Dioxide, applied at a rate of thousands of pounds per minute, the USAF Model 06 was designed and built by CARDOX to USAF performance specifications.

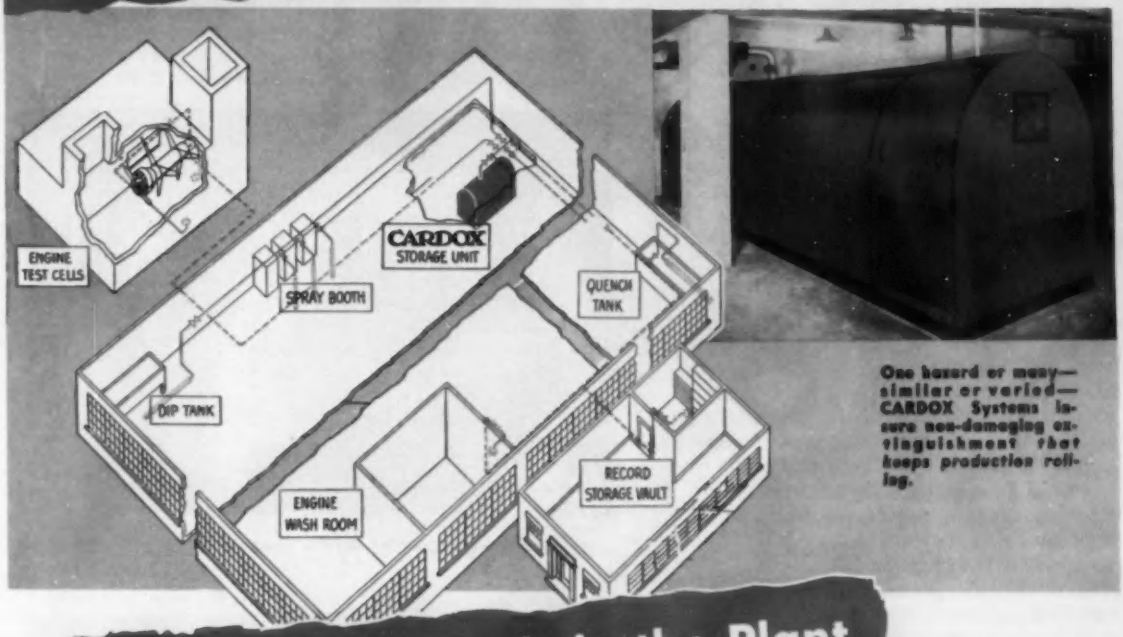
The truck is completely winterized to operate with full efficiency at temperatures to −65°F. . . . It embodies features entirely new to crash fire protection, as well as many others proven by CARDOX experience in building *hundreds* of CARDOX Airport Fire Trucks for civilian and military Air Fields.



CARDOX Airport Fire Truck—Model AJ2 for civilian airports. Carries two tons of CARDOX Low Pressure Carbon Dioxide, supplemented by 2000 gallons of expanded foam. Meets NFPA carbon dioxide recommendation for aircraft weighing over 90,000 lbs., gross.

WHEN YOU NEED AIRPORT FIRE PROTECTION, CARDOX' EXPERIENCE AND EQUIPMENT MEETS THAT NEED BEST! CALL UPON US—OR WRITE FOR FULL INFORMATION.

meets Your needs Best!



One hazard or many—similar or varied—CARDOX Systems insure non-damaging extinguishment that keeps production rolling.

for Critical Hazards in the Plant

Here's a fact proved by industry's fire losses: *All hazards are not alike.* In practically every plant there are *specialized* hazards where fire can hit hard and take off fast.

For such hazards, *specialized* protection by CARDOX Low Pressure Carbon Dioxide Systems—able to choke off fire in the first precious minutes—is simple security against disastrous losses!

In hundreds of plants, CARDOX Systems are "standard" approved protection for

Quench Tanks Spray Rooms Pump Rooms
Flammable Liquid Storage Motors Generators
and other critical hazards

Fastest Extinguishment— No Extinguishment Damage

CARDOX Carbon Dioxide can be applied at rates so high as to stop big fires almost instantly. It causes no extinguishment damage—holds fire damage to an absolute minimum. The entire supply of carbon dioxide—whether one ton or many—is available at all times for all hazards covered. Ample reserves that guarantee continuous protection are economically practical. Both fixed and hose reel spot protection can be provided.

Whatever your hazards, find out what CARDOX and its experience through thousands of successful installations can do about them. Ask for a free survey by a CARDOX engineer. Meanwhile write for our descriptive Folio 1-1.

CARDOX SYSTEMS are listed by Underwriters' Laboratories, Inc.—approved by Factory Insurance Association and Associated Factory Mutuals.

CARDOX owns and maintains its own national system for distribution of liquid CARDOX Carbon Dioxide—Your Cardox System is always operable when you need it.

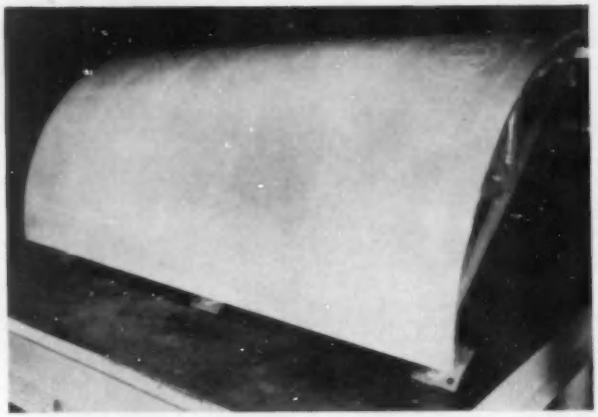
CARDOX CORPORATION

BELL BUILDING • CHICAGO 1, ILLINOIS

OFFICES IN PRINCIPAL CITIES

Reinforced Plastics Industry Evaluates Future Markets

By
R. Raymond Kay



Laminated Epocast tooling master prepared at North American Aviation

LOS ANGELES, CALIFORNIA

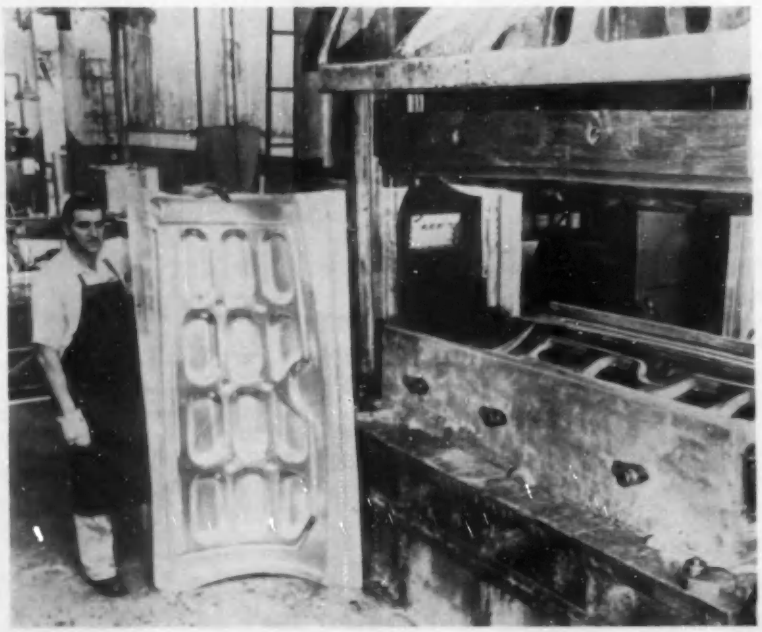
"WHERE do we stand and where do we go from here?" That was the number one question that sparked the thinking and talking of engineers and administrative men at the Tenth Annual Technical and Management Conference, Reinforced Plastics Division, Society of the Plastics Industry. It was the first annual meeting held on the West Coast.

Plastics materials manufacturers, fabricators, molders, suppliers, research and development men for many industries—aircraft, automotive, metalworking, marine, and building—took a thorough look at everything new in reinforced plastics developments and applications at the February meeting in Los Angeles. They saw a heap of progress and agreed that there is a tremendous need for still more research and development work.

Representatives from the plastics industry came from all over the country in great numbers; and some came from abroad. A virtual "Who's Who" in the business participated. Nearby airframe manufacturers all sent large delegations to the three-day meeting.

Fifty West Coast companies, centered in southern California, last year produced $100 million in reinforced plastics products—25 pct of the entire reinforced plastics industry output. Roughly 150 companies

(*Turn to page 426, please*)



Jet airframe parts, practically free of wrinkles, are being formed by drop hammers in Epon resin surfaced dies at Lockheed Aircraft Corp. Dies are made quickly at low cost, and can be cast from models without any machining at all.

Application of High Temperature Materials to Aircraft Power Plants

By Alan Levy
Supervisor, Material & Process Section
Marquardt Aircraft Co.

THE use of metals at temperatures in excess of 1200F and up to temperatures in the vicinity of their melting points is a challenging and fascinating portion of the fight to pass the heat barrier in the design and performance of aircraft and their powerplants. The materials available for service in this temperature range are restricted. The considerations of designing structural components involve many more problems than the old criteria of strength to weight ratio and fabrication costs. Such properties as thermal expansion, heat conductivity, surface emissivity and scaling resistance are as important in determining which metal should be used for a given application, as are the various measurements of strength heretofore the primary considerations in material selection.

This article will limit itself to the fields of turbojet afterburner, ramjet and rocket design and fabrication. Turbojet engine design and development as it is affected by materials has been discussed extensively. However, the fields of afterburners, ramjet and rocket engine design, with their higher operating temperatures and shorter lives, is a somewhat new subject that will command more and more attention from the materials engineer.

Types of Metals Used in Elevated Temperature Application

Characteristics and Functions of Alloying Elements

One of the primary requirements of metals and alloying elements that are used to produce high temperature alloys is that they and the products of their combination have melting temperatures above the service temperature. In addition to this, requirements of strengthening the end-alloy, ability of elements to combine to produce ductile alloys, cost and availability of the alloying elements, and other important factors must be figured.

Following is a list of those metallic elements commonly found in high temperature alloys and a brief description of their functions:

Iron—A foundation element for structural metals.

Nickel—Austenitizer; improves oxidation resistance in stainless steels; adds high temp strength; improves corrosion resistance.

Cobalt — Base metal for highest strength high temp materials; improves high temperature strength in mixed alloy materials (N-155).

Chromium—Primary source of oxidation resistance.

Molybdenum—Improves high temperature strength; adds corrosion resistance; has precipitation hardening potential in some alloys.

Tungsten—Improves high temperature strength.

Columbium—Stabilizing element in austenitic stainless steels; adds high temp strength.

Titanium—Same as Cb, but has precipitation hardening value in some alloys.

Aluminum — Primarily added as precipitation hardening agent. (17-7PH, Inconel X)

Vanadium — Thought to improve creep resistance.

Silicon—Added up to about two per cent to improve oxidation resistance in some stainless steels.

Classes of Alloys

The classes of metals that retain sufficient strength to be used in the service temperature range above 1200 F are the alloys which have iron, nickel, or cobalt as the major constituent. Alloys based on all three of these elements and mixtures of them are currently being used in countless powerplant applications. New developments in metals technology are preparing alloys based on molybdenum, titanium and possibly chromium and other metals; but at this time iron, nickel and cobalt are the foundation elements for the high temperature alloy field. Listed below are some of the commonly used alloys and an insight into their characteristics, divided into classes based on their major constituent. In general, it can be said that alloys of iron are used in the temperature range up to 1500 F, alloys of nickel in the temperature range 1500-1800 F, and alloys of cobalt in the range 1600-2200 F. The materials listed are, for the most part, generally available from material producers. Many of the major powerplant manufacturers have developed similar alloys primarily for their own products and are producing or having them produced to their own specifications.

SOME COMMON HIGH TEMPERATURE ALLOYS

A. Iron Base Alloys*

Type 321, 347, Stainless Steel — These materials are stabilized 18 per cent chromium, eight per cent nickel basic non-hardenable stainless steel. They have excellent fabrication characteristics, are weldable and fully corrosion resistant. Are commonly used in elevated temperature applications to 1500 F where medium strength and corrosion resistance is required.

Type 310, Stainless Steel—A standard AISI steel which contains 25 per cent chromium and 20 per cent nickel. This material has excellent scaling resistance up to 2000 F and over. Is used where high strength is not needed at temperatures to 2200 F.

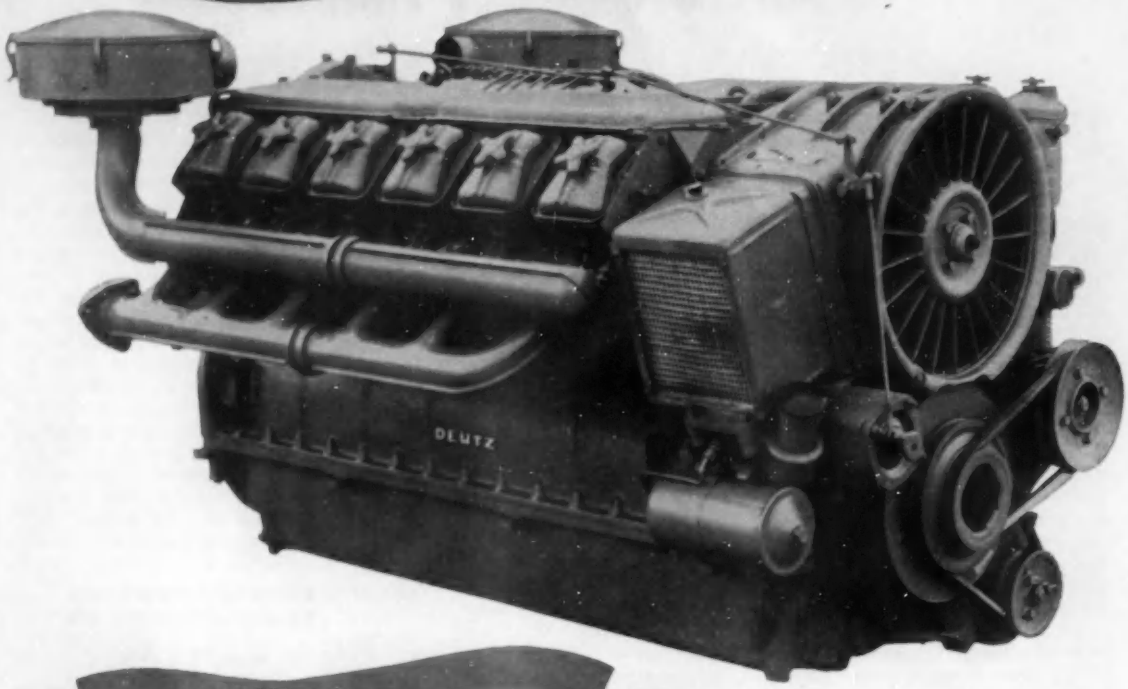
19-9DL, 19-9 DX — A low alloyed (with molybdenum and tungsten) modified stainless steel. It retains strength comparative to most of the high temperature alloys up to 1400-1500 F. An excellent low critical alloy index material for general structural use up to 1500 F.

16-25-6—A chromium, nickel, molybdenum alloy available in bars and forgings. This alloy has been a commonly used turbine wheel material for service up to about 1500 F.

A-286—An age hardenable stainless

(*Turn to page 368, please*)

AIR-COOLED DIESEL ENGINES



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Twelve-cylinder engine, V-Type, 4-cycle, output up to 250 HP at 2300 RPM.

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FOR DETAILED SPECIFICATIONS ON THE ABOVE ENGINE, SEE DIESEL ENGINE SPECIFICATION TABLES IN THIS ISSUE.

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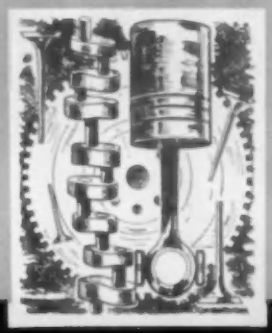
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DEUTZ

AIR-COOLED DIESEL ENGINES



AUTOMOTIVE ENGINE SECTION

3

SPECIFICATIONS OF ENGINES INCLUDING **GASOLINE ENGINES**—DESIGNED FOR TRUCKS • BUSES • TRACTORS MARINE AND INDUSTRIAL USE • **DIESEL ENGINES**—DESIGNED FOR TRUCKS • BUSES • TRACTORS • LOCOMOTIVES • MARINE AND INDUSTRIAL USE • **SMALL GASOLINE ENGINES** • **OUTBOARD MOTORS** •

AI
AUTOMOTIVE INDUSTRIES
37TH ANNUAL STATISTICAL ISSUE • 1955



CARS, TRUCKS AND TRACTORS CAN LOSE THEIR HORSEPOWER, TOO!

Engine manufacturers can be proud of the full responsive horsepower they have built into today's engines.

But, those engines can lose their horsepower, too!

Lost Horsepower is costly and aggravating . . . means poor performance . . . excessive oil and fuel consumption.

Chrome piston rings are vitally important in horsepower control. That's why

35 out of 37 engine manufacturers specifying chrome rings use

Perfect Circle

The Standard of Comparison



The application of solid chrome plating to piston rings, as perfected by Perfect Circle, more than doubles the life of pistons, cylinders and rings. Complete performance data will be sent upon request. Perfect Circle Corporation, Hagerstown, Indiana; The Perfect Circle Co., Ltd., Toronto, Ontario.

Internal Combustion Engine Production

(Except Automotive and Aircraft)

As reported by the Industry Division, Bureau of the Census

Quantity and Value of Shipments, by Type of Engine, by Years

Type of Engine	Total Production of Engines	Shipments: No. of Engines	Shipments: Value at Plant	Used in Product of Same Co.
1953				
Gasoline	3,025,550	2,205,994	$171,289,000	819,556
Diesel	117,628	58,099	101,729,000	59,529
Outboard	463,355	463,355	67,045,000	.....
Gas	9,618	3,133	37,615,000	6,482
Dual-fuel	8,972	4,648	10,743,000	4,324
Total—1953	3,625,120	2,735,190	$488,421,000	889,921
1952				
Gasoline	2,945,050	2,225,014	$160,047,000	719,436
Diesel	139,530	63,878	104,575,000	56,060
Outboard	337,419	337,419	46,129,000	.....
Gas	8,624	3,911	47,249,000	4,713
Dual-fuel	10,177	5,248	10,047,000	4,929
Total—1952	3,421,000	2,636,070	$477,447,000	785,138
1951				
Gasoline	3,163,551	2,172,266	$163,677,000	931,295
Diesel	129,203	66,550	106,377,000	62,635
Outboard	291,697	291,697	39,456,000	.....
Other*	28,572	15,664	71,184,000	12,408
Total—1951	3,592,523	2,546,177	$480,894,000	1,006,348
1950				
Gasoline	2,468,274	1,712,938	$129,816,000	745,336
Diesel	90,958	42,907	100,482,000	56,040
Outboard	367,173	367,173	41,037,000	.....
Other	125,850	122,206	48,777,000	3,844
Total—1950	3,050,252	2,245,224	$320,112,000	805,220

* Includes miniature (model) engines, gas engines and dual-fuel engines.

1953 Gasoline Engine Production by HP and Displacement

Hp Ratings	Total Engines Produced	No. of Engines	Value at Plant	Used in Product of Same Co.
Under 2	1,102,917	903,121	$20,788,000	199,796
2.0-2.9	827,576	748,840	22,702,000	77,536
3.0-3.9	77,710	60,599	3,134,000	17,110
4.0-6.9	234,821	120,026	6,083,000	114,793
6.0-6.9	8,307	4,463	424,000	3,844
7.0-7.9	91,904	1,562	140,000	33,539
8.0-8.9		58,094	4,919,000	
10-10.9		6,068	1,055,000	
11-40	373,394	164,732	30,000,000	208,662
41-45	102,921	10,071	2,515,000	92,850
46-50	65,422	16,427	3,910,000	48,995
51-60	27,883	18,424	5,477,000	9,459
61-70	39,121	11,320	4,461,000	2,119
71-80		25,662	10,534,000	
81-90	26,008	25,962	8,204,000	16
91-100	8,962	7,905	4,059,000	757
101-150	32,985	22,977	16,870,000	9,111
151-200	7,270	4,858	6,503,000	601
201-300		1,374	4,736,000	
301 and over		466	3,361,000	
Total—1953	3,025,550	2,205,994	$171,289,000	819,556
By Piston Displacement (Cu. In.)				
Displacement				
Under 6.0	1,194,403	914,919	$21,939,000	279,484
6.0-10.9	899,850	779,489	23,901,000	120,161
11-15	72,049	62,786	4,219,000	9,263
16-30	156,839	121,790	8,864,000	21,010
31-40		6,864	1,036,000	
41-60		9,386	1,928,000	
61-100	105,368	73,270	20,556,000	32,086
101-125	153,648	44,101	8,714,000	109,547
126-175	174,013	71,552	16,103,000	102,461
176-200	17,296	4,199	1,451,000	13,088
201-225	80,236	29,271	9,306,000	20,965
226-250	74,827	46,966	16,673,000	25,899
251-300	65,019	7,957	4,648,000	57,152
301-350	46,535	18,401	11,460,000	28,041
351-400		2,293	1,213,000	
401-500	9,086	4,665	5,456,000	3,433
501-600	5,610	2,243	2,483,000	217
601-800		2,026	4,825,000	
801-900		139	312,000	
901-2,000		567	2,060,000	
2,001 and over		396	3,294,000	
Total—1953	3,025,550	2,205,994	$171,289,000	819,556

1953 Diesel Engine Production by Hp Ratings

Hp Ratings	Total Engines Produced	Shipments: No. of Engines	Shipments: Value at Plant	Used in Product of Same Co.
Under 10	1,552	783	$ 646,000	769
11-20	729	472	712,000	257
21-30	14,905	785	807,000	11,170
31-40		976	1,029,000	
41-50		1,974	1,301,000	
51-70	29,224	19,961	15,662,000	12,633
71-100	22,103	10,602	19,291,000	11,121
101-150	39,177	10,996	26,236,000	17,691
151-200	12,929	10,335	27,564,000	2,585
201-300	3,580	3,244	29,945,000	336
301-400	992	568	7,822,000	486
401-500		79	2,167,000	
501-600	521	297	15,195,000	171
601-700		63	3,625,000	
701-800	362	65	2,929,000	243
801-900		34	1,347,000	
901-1,000		30	1,823,000	
1,001-1,500	1,046	140	7,344,000	1,000
1,501 and over	727	187	13,440,000	546
Total	117,628	59,099	$101,729,000	59,529

1953 Diesel Engine Production by Displacement

Cu. In. Displacement	Total Engines Produced	Shipments: No. of Engines	Shipments: Value at Plant	Used in Product of Same Co.
20-50	1,076	555	$ 327,000	521
51-100	730	425	660,000	302
101-150	10,283	6,732	5,814,000	879
151-200		2,662	1,955,000	
201-250	10,655	7,971	8,960,000	2,684
251-300	12,773	9,918	14,579,000	2,855
301-400	20,832	4,168	5,349,000	16,664
401-600	16,409	9,401	26,894,000	7,008
601-800	22,019	3,745	11,327,000	12,115
801-1,000		6,186	22,223,000	
1,001-1,500	5,380	1,657	19,869,000	3,983
1,501-2,000	7,882	2,598	14,137,000	5,284
2,001-3,000	1,623	1,082	22,643,000	541
3,001-5,000	467	439	6,275,000	28
5,001-10,000	280	257	6,323,000	23
10,001-15,000	1,003	259	9,073,000	745
15,001-25,000	134	57	2,988,000	77
25,001 and over	63	63	4,428,000	.....
	60	60	7,967,000	.....
Total	117,628	59,099	$101,729,000	59,529

GASOLINE ENGINES 1955

TRUCKS • BUSES • TRACTORS

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	VALVES									
				With Bare Engine	With Standard Accessories						Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.)		Min. Port Diameter (In.)		Lift (In.)		Stem Diameter (In.)	
													Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
1	Aerojet	M	4-2½x2¼	26.5-9000	26.5-4800	44.0	9.00	23-3600 (EA)	N	Se	I	St	1.06	1.06	1.06	1.06	.234	.234	.313	.313
2	Allis-Chalmers B-125	Tr,Ind	4-3⅝x3½	33.7-1900	31.7-1900	125.2	6.25	92-1300 (EA)	W	In	I	St	1.43	1.31	1.28	1.03	.390	.390	.341	.341
3	W-226	Tr,Ind	4-4x4½	63-1800	58.7-1800	226.0	6.48	193-1000 (EA)	W	In	I	St	1.89	1.56	1.50	1.32	.376	.390	.372	.372
4	E-963	Tr,Ind	4-5¼x6½	81-1050	74-1050	562.8	5.29	400- 650 (EA)	W	In	I	St	2.21	2.21	2.00	2.00	.440	.417	.497	.497
5	Bronnan 29	Ind	4-2⅝x3½	29-3600	15-3600	50.0	7.40	34-3200 (EA)	N	Se	L	Sil	1.12	1.00	.875	.875	.250	.250	.312	.312
6	Imp.	M	4-2⅝x3½	29-4000	20-4000	50.0	7.40	34-3200 (EA)	N	Se	I	Sil	1.12	1.00	.875	.875	.250	.250	.312	.312
7	75	T,In	6-3¼x4½	90-3500	75-3300	230.3	6.70	175-1000 (EA)	N	In	L	Sil	1.50	1.50	1.37	1.25	.343	.343	.312	.312
8	Frontenac	M	6-3¼x4½	95-3200	92-3200	230.3	5.50	194-1250	N	In	L	Sil	1.50	1.37	1.37	1.25	.343	.343	.312	.312
9	CE	Ind	4-4½x5	84-1600	45-1600	318.0	5.00	203-1000 (EA)	N	Se	L	Sil	2.00	2.00	1.87	1.87	.375	.375	.375	.375
10	E-4	M	4-4½x5	84-1600	45-1600	318.0	5.00	203-1000 (EA)	N	Se	L	Sil	2.00	2.00	1.87	1.87	.375	.375	.375	.375
11	B-79	T,B,Tr,Ind	6-4x5½	90-2000	75-2000	415.0	4.50	278- 900 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
12	100	M	6-4x5½	94-2000	80-2000	415.0	6.00	278- 900 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
13	B-100	T,B,Tr,Ind	6-4⅝x5½	94-2000	80-2000	498.0	4.50	350-1200 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
14	125	M	6-4⅝x5½	110-2200	94-2200	498.0	6.00	350-1200 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
15	150	M	6-4½x6½	150-2800	120-2800	628.3	6.00	500-1200 (EA)	N	Se	I	Sil	2.50	2.50	2.12	2.12	.437	.437	.500	.500
16	Buda 4B-153	Tr,Ind	4-3½x4½	47-2800	42-2800	153.0	6.00	112-1500 (BE)	W	In	I	2112	1.90	1.28	1.37	1.12	.429	.429	.312	.312
17	4B-182	Tr,Ind	4-3½x4½	54-2800	48-2800	182.0	5.54	140- 800 (BE)	N	In	I	2112	1.90	1.28	1.37	1.12	.429	.429	.312	.312
18	6B-230	Tr,Ind	6-3½x4½	72-3000	65-3000	230.0	6.00	168-1000 (BE)	W	In	I	2112	1.90	1.28	1.37	1.12	.429	.429	.312	.312
19	6B-273	Tr,Ind	6-3½x4½	82-2900	75-2900	273.0	5.40	204-1200 (BE)	N	In	I	2112	1.90	1.28	1.37	1.12	.429	.429	.312	.312
20	HP-328	Tr,Ind	6-3⅞x5	78-2400	68-2400	326.0	5.40	229-1100 (BE)	N	In	L	2112	1.65	1.53	1.50	1.37	.344	.344	.372	.372
21	HP-361	Tr,Ind	6-3⅞x5	84-2400	71-2400	361.0	5.83	232- 900 (BE)	N	In	L	2112	1.65	1.53	1.50	1.37	.344	.344	.372	.372
22	K-429	Tr,Ind	6-4⅜x4⅝	107-2400	95-2400	428.0	5.33	276-1100 (BE)	N	In	L	2112	1.90	1.78	1.75	1.62	.400	.400	.372	.372
23	L-529	Tr,Ind	6-4⅛x5	113-2400	94-2400	525.0	4.75	340- 900 (BE)	N	In	L	2112	1.90	1.78	1.75	1.62	.400	.400	.372	.372
24	LO-525	T,Tr,Ind	6-4⅛x5	157-2400	139-2400	525.0	6.00	400-1200 (BE)	N	In	L	2112	1.90	1.68	1.75	1.50	.466	.466	.372	.372
25	6-MO-853	T,Ind,M	6-5½x6	199-2000	170-2000	893.0	5.50	670-1000 (BE)	W	In	I	2112	2.45	2.02	2.19	1.75	.540	.540	.435	.433
26	6-MO-970	T,Ind,M	6-5½x6½	200-1800	171-1800	970.0	5.43	729- 800 (BE)	W	In	I	2112	2.45	2.02	2.19	1.75	.540	.540	.435	.433
27	6-MO-1290	Ind	6-5½x6½	293-1800	248-1800	1290.0	5.43	1000-1100 (BE)	W	In	I	CNS	2.45	2.02	2.19	1.75	.540	.540	.435	.433
28	PC-1879	Ind	6-6⅝x8⅛	232-1000	197-1000	1879.0	6.00	1300- 900 (BE)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
29	PCG-1879	Ind	6-6⅝x8⅛	232-1000	197-1000	1879.0	6.00	1300- 900 (BE)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
30	2PCS-1879	Ind	6-6⅝x8⅛	340-1200	310-1200	1879.0	5.27	1540- 950 (BE)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
31	6PC-2505	Ind	6-6⅝x8⅛	386-1200	320-1200	2505.0	6.00	1860- 750 (BE)	W	In	I	CNS	2.71	2.53	2.50	2.28	.703	.703	.558	.556
32	2PCS-2505	Ind	6-6⅝x8⅛	466-1200	420-1200	2505.0	5.27	2110- 950 (BE)	W	In	I	CNS	2.71	2.53	2.50	2.28	.703	.703	.558	.556
33	6MOS-1290	Ind	6-6⅛x8⅛	400-2100	360-2100	1290.0	5.70	1170-1100 (BE)	W	In	I	2112	2.45	2.02	2.19	1.75	.540	.540	.435	.433
34	Chevrolet Loadmaster 235	T	6-3⅝x3⅞	112-3700	105-3600	235.5	7.90	206-2000 (BE)	N	In	I	Sil	1.88	1.51	1.44	1.28	.294	.312	.341	.339
35	Thriftmaster 235	T	6-3⅝x3⅞	107-3600	102-3500	235.5	7.90	192-2000 (BE)	N	In	I	Sil	1.88	1.51	1.44	1.28	.294	.312	.341	.339
36	Jobmaster 261	T	6-3⅝x3⅞	125-4000	114-3600	261.0	7.17	210-2000 (BE)	N	In	I	Sil	1.88	1.51	1.44	1.28	.405	.414	.341	.339
37	Jobmaster 261	T	6-3⅝x3⅞	125-4000	123-3800	261.0	7.17	229-2000 (BE)	N	In	I	Sil	1.88	1.51	1.44	1.28	.405	.414	.341	.339
38	Chris-Craft *A, *B	M	6-3½x4		88-3200	132.7	7.50	109-2400 (EA)	N	In	L	2112N	1.49	1.36	1.25	1.12	.312	.312	.310	.310
39	*K	M	6-3½x4½		95-3200	229.7	7.35	173-1800 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.311	.311	.310	.310
40	*KL	M	6-3½x4½		105-3200	236.6	7.52	190-2200 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.311	.311	.310	.310
41	KLC	M	6-3½x4½		120-3800	236.6	7.52	175-3000 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.344	.344	.310	.310
42	KBL	M	6-3½x4½		131-3800	236.6	7.52	191-3000 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.344	.344	.310	.310
43	*M	M	6-4x4½		130-3000	320.4	7.50	239-2400 (EA)	N	In	L	2112N	1.83	1.68	1.81	1.50	.386	.386	.372	.372
44	*ML	M	6-4x4½		145-3000	339.2	6.86	267-2400 (EA)	N	In	L	Eat	1.83	1.68	1.81	1.50	.386	.386	.372	.372
45	MBL	M	6-4x4½		158-3400	339.2	6.86	269-2600 (EA)	N	In	L	Eat	1.83	1.68	1.81	1.50	.387	.387	.372	.372
46	*W	M	6-4⅛x4⅝		160-3600	404.3	6.49	322-1500 (EA)	N	In	L	2112N	1.92	1.78	1.87	1.68	.388	.388	.372	.372
47	WB	M	6-4⅛x4⅝		190-3200	404.3	6.48	354-1600 (EA)	N	In	L	2112N	1.92	1.78	1.87	1.68	.442	.442	.372	.372
48	Chrysler M44-5	M	8-3⅛x3½		199-3800	269.0	7.20	228-2200 (EA)	N	In	I	Sil*	1.75	1.41	1.64	1.36	.251	.290	.372	.434
49	M45-5	M	8-3⅛x3½		200-3800	331.1	7.20	298-2600 (EA)	N	In	I	Sil*	1.94	1.75	1.83	1.72	.250	.250	.372	.433
50	M46 Ace	M	6-4⅛x3½		199-3200	404.3	6.60	187-1400	N	In	L	Sil	1.53	1.41	1.41	1.28	.375	.375	.340	.340
51	M48-5 Ace Spec	M	6-3¾x4½		210-3800	230.2	7.00	190-1600	N	In	L	Sil	1.53	1.41	1.41	1.28	.375	.375	.340	.340
52	M47 Crown	M	6-3¾x4½		119-3200	250.6	6.50	208-1400 (EA)	N	In	L	Sil	1.72	1.53	1.44	1.38	.375	.375	.340	.340
53	M47 Crown Spec	M	6-3¾x4½		125-3600	250.6	7.00	208-1900 (EA)	N	In	L	Sil(x)	1.72	1.53	1.44	1.38	.375	.375	.340	.434
54	M48 Majestic	M	8-4⅛x5⅛		160-3800	413.0	6.50	350-1600	N	In	L	Sil(x)	1.94	1.75	1.75	1.58	.410	.379	.371	.434
55	Ind. 16	Ind	8-3⅛x3½	137-4000	95-3000	241.0	7.50	222-2000 (BE)	N	In	I	XCR	1.66	1.41	1.38	1.29	.240	.240	.373	.372
56	Ind. 16A	Ind	8-3⅛x3½	135-4000	110-4000	241.1	7.10	182-2000 (EA)	N	In	I	XCR	1.66	1.41	1.44	1.19	.240	.240	.372	.372
57	Ind. 19	Ind	8-3⅛x3½	156-4000	126-4000	276.1	7.10	205-2000 (EA)	N	In	I	Sil	1.75	1.41	1.44	1.25	.240	.240	.372	.372
58	Ind. 19	Ind	8-3⅛x3½	157-4000	111-3000	276.0	7.50	250-2000 (BE)	N	In	I	XCR	1.66	1.51	1.47	1.30	.240	.240	.373	.372
59	Ind. 24	Ind	8-3⅛x3½	183-4000	132-3000	331.1	7.50	306-2000 (BE)	N	In	I	XCR	1.94	1.78	1.80	1.64	.254	.238	.373	.372
60	Ind. 30	Ind	6-3¾x4½	98-3600	73-2800	230.0	7.00	190-1200 (BE)	N	In	L	XCR	1.54	1.41	1.23	1.29	.379	.379	.340	.340
61	Ind. 31	Ind	6-3¾x4½	98-3600	73-2800	229.0	7.00	190-1200 (BE)	N	In	L	XCR	1.54	1.41	1.23	1.29	.379	.379	.340	.340
62	Ind. 32	Ind	6-3¾x4½	129-3600	88-2800	265.0	6.00	225-1200 (BE)	N	In	L	XCR	1.72	1.51	1.44	1.38	.379	.379	.341	.340
63	Ind. 33	Ind	6-3¾x4½	129-3600	88-2800	265.0	6.00	225-1200 (BE)	N	In	L	XCR	1.72	1.51	1.44	1.38	.379	.379	.341	.340
64	Ind. 34	Ind	6-4x5	155-2800	116-2400	376.0	6.50	334-1200 (BE)	N	In	L	Sil	1.94	1.75	1.75	1.44	.410	.379	.372	.434
65	Ind. 36	Ind	6-4⅛x5½	163-2800	123-2400	413.0	6.50	343-1600 (BE)	N	In			1.94	1.75	1.75	1.44	.410	.379	.372	.434
66	Climax R41	Ind	6-6x7	123-1200	112-1200	791.0	4.70	525- 750 (EA)	N	Se	I	Sil	2.98	2.98	2.25	2.25	.500	.500	.562	.562
67	R61	Ind	6-6x7	163-1200	165-1200	1187.4	4.70	802- 700 (EA)	N	Se	I	Sil	2.98	2.98	2.25	2.25	.500	.500	.562	.562
68	K-67	Ind	6-7x7	264-1200	250-1200	1610.0	5.20	1220- 850 (BE)	W	Se	I	Sil	2.75	2.62	2.50	2.36	.667	.667	.562	.562
69	K-75	Ind	6-7½x7	304-1200	290-1200	1855.0	5.56	1420- 850 (BE)	W	Se	I	Sil	2.75	2.63	2.50	2.36	.666	.666	.563	.563
70	V-88	Ind	8-7x7	340-1200	320-1200	2156.0	5.20	1600- 800 (BE)	W	Se	I	Sil	2.81	2.66	2.50	2.37	.667	.667	.562	.562
71	V-86	Ind	8-7½x7	380-1200	370-1200	2474.0	5.56	1875- 800 (BE)	W	Se	I	Sil	2.76	2.63	2.50	2.36	.667	.667	.562	.562
72	V-122	Ind	12-7x7	495-1200	445-1200	3232.0	5.20	2460- 750 (BE)	W	Se	I	Sil	2.81	2.66	2.50	2.37	.667	.667	.562	.562
73	V-126	Ind	12-7½x7	585-1200	545-1200	3711.0	5.56	2800- 800 (BE)	W	Se	I	Sil	2.76	2.63	2.50	2.36	.667	.667	.588	.588
74	Continental N-4062	Tr	6-2⅝x3½	28.3-3600		62.0	6.00	41-2500 (BE)	N	In	L	Op	.906	.906	.750	.750	.187	.187	.314	.312
75	N-68	Ind	4-2½x3½	14.2-2200		56.0	6.00	30.5-1200 (BE)	W		L	Op	1.00	.906					.315	.313
76	N-C2	Ind	4-2⅝x3½	16-2200		62.0	6.46	43-1400 (BE)	N	In	L	Op	.995	.995	.750	.750	.187	.187	.314	.312
77	Y-68	Ind	4-2½x3½	21.4-2400		56.0	6.00	40-2000 (BE)	N	In	L	Op	1.26	1.01	1.06	.875	.296	.281	.314	.313
78	Y-4068	Tr	4-2½x3½	28-3400		56.0		51-2000 (BE)	N	In	L	Op	1.26	1.01	1.06	.875	.296	.281	.314	.313

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

MARINE • INDUSTRIAL

VALVES				PISTONS				CONNECTING RODS			CRANKSHAFT							CARBURETOR			OVERALL DIMENSIONS (In.)				
Seats														MAIN BEARINGS											
Angle (Deg.)	Inserts Used?	Insert Materia (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Crank-Pin Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure lb—	Make	Size	Engine Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. Nos.)	Line Number
45	N	.....	SD	Al	.....	.63x2.13	4	4140	4½	.....	4140	.....	1.38x1.06	5	1.38x1.44	1.50x1.50	acdg	Car	1⅛	180	17½	19½	24½	N	1
45	N	TP	HG	Al	25	.813x2.87	4	1040	6½	29	1045	N	1.93x1.22	3	2.25x1.62	2.25x1.90	adfg	Zen	⅜	370	16⅛	21½	25½	5	2
45	E	TP	HG	Al	31	.99x3.51	4	1040	7½	42	5046	.....	2.38x1.84	3	2.44x1.62	2.48x1.75	acdf	MoS	1	545	18¼	31⅛	33½	.....	3
45	E	TP	HG	CI	102	1.50x4.87	4	1040	13	102	1045	N	2.75x3.24	3	3.00x3.50	3.00x4.75	abcdfg	Zen	1½	2020	27	47½	53	1	4
45	N	.....	HG	Al	6	.625x2.00	3	1045	5½	14	1045	Y	1.31x1.25	3	2.50x1.50	2.50x1.50	abcdg	Tll	⅝	128	12½	17⅛	18½	.....	5
45	N	.....	HG	Al	6	.625x2.00	3	1045	5½	14	1045	N	1.31x1.25	3	2.50x1.50	2.50x1.50	abcdg	Tll	⅝	165	12¾	17⅝	20	.....	6
45	N	.....	HG	Al	6	.625x2.00	3	1045	5½	14	1045	Y	1.31x1.25	3	2.50x1.67	2.50x1.67	acdg	Str	1½	710	18¾	22	37⅛	.....	7
45	Y	TS	Ch	Al	23	.875x2.75	4	2320	7½	29	1045	Y	2.06x1.25	4	2.50x1.67	2.50x1.67	acdg	Str	1½	710	18¾	22	37⅛	.....	8
45	E	TS	Ch	Al	23	.875x2.75	4	2320	7½	29	1045	N	2.06x1.25	4	2.50x1.67	2.50x1.75	acdg	Str	1½	800	21	29¾	37⅛	.....	9
45	N	.....	HG	SS	80	1.17x4.00	4	1045	11	64	1045	N	2.50x2.50	3	2.50x4.25	2.50x3.50	abcdg	Str	1½	980	18	18	53	.....	10
45	N	.....	HG	SS	72	1.17x4.00	5	1045	11	64	1045	N	2.50x2.50	3	2.50x4.25	2.50x3.50	abcdg	Str	1½	980	18	18	53	.....	11
45	N	.....	HG	SS	64	1.17x3.87	4	CNS	11	65	CNS	N	2.50x2.00	3	2.75x4.50	2.75x3.00	acdg	Str	1½	875	25¾	33½	49	.....	12
45	N	.....	HG	SS	64	1.17x3.87	4	AS	.....	.....	CNS	N	2.50x2.00	3	2.75x4.50	2.75x3.00	abcdg	Str	1½	875	25¾	33½	49	.....	13
45	N	.....	HG	SS	76	1.25x3.87	5	CNS	11	65	CNS	N	2.50x2.00	3	2.75x4.50	2.75x3.00	acdg	Str	1½	900	19¼	24¾	65	.....	14
45	N	.....	HG	SS	70	1.25x3.87	5	AS	11	65	CNS	N	2.50x2.00	3	2.75x4.50	2.75x4.88	abcdg	Str	1½	1480	20	30	74	.....	15
45	N	.....	BG	SS	72	1.37x4.00	5	AS	12	90	CNS	Y	2.62x2.67	7	2.62x3.00	2.63x3.50	abcd	Str	1½	1480	20	30	74	.....	16
45	N	.....	HG	CI	.....	1.00x2.84	4	CS	7½	.....	1045	N	2.00x1.31	3	2.50x1.25	2.50x1.75	abcdfg	Zen	1	500	18½	26½	30½	2,3,4	16
45	N	.....	HG	CI	.....	1.00x3.09	4	CS	7½	.....	1045	N	2.00x1.31	3	2.50x1.25	2.50x1.75	abcdfg	Zen	1¼	520	18½	26½	30½	2,3,4	17
45	N	.....	HG	CI	.....	1.00x	4	1045	7½	.....	1045	N	2.00x1.31	7	2.50x1.25	2.50x1.75	abcdfg	Zen	1¼	625	18½	26½	30½	2,3,4	18
45	N	.....	HG	CI	.....	1.00x3.09	4	1045	7½	.....	1045	N	2.00x1.31	7	2.50x1.25	2.50x1.75	abcdfg	Zen	1¼	635	18½	26½	30½	2,3,4	19
45	N	.....	HG	CI	.....	1.00x3.09	4	1045	7½	.....	1045	N	2.00x1.31	7	2.50x1.25	2.50x1.75	abcdfg	Zen	1¼	635	18½	26½	30½	2,3,4	20
45	E	DC	HG	CI	42	1.12x3.25	4	CS	9½	42	CS	N	2.12x1.62	7	3.00x1.50	3.00x2.12	abcdg	Zen	1½	905	25¾	33½	39½	2,3,1	21
45	E	DC	HG	CI	42	1.12x3.25	4	CS	9½	42	CS	N	2.12x1.62	7	3.00x1.50	3.00x2.12	abcdg	Zen	1½	905	25¾	33½	39½	2,3,1	22
45	E	DC	HG	CI	42	1.12x3.25	4	CS	9½	42	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdg	Zen	1½	905	25¾	33½	47⅞	2,3,1	23
45	E	DC	HG	Al	68	1.25x3.81	4	CS	11	86	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdg	Zen	1½	980	25¾	33½	47⅞	2,3,1	24
45	E	DC	HG	CI	98	1.25x3.81	4	CS	11	86	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdg	Zen	1½	1196	27½	38½	49¼	2,3,1	25
30	E	Jad	HG	Al	98	1.25x3.81	5	AS	11	78	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdg	Zen	2	2400	28¾	48¾	68½	0,1	26
30	E	DC	HG	CI	212	1.75x4.75	5	1040	12¼	171	1045	N	3.30x2.12	7	3.99x3.00	3.99x2.25	abcdfg	Zen	2	2400	28¾	48¾	68½	0,1	26
30	E	DC	HG	CI	212	1.75x4.75	5	1040	12¼	171	1045	N	3.30x2.12	7	3.99x3.75	3.99x2.25	abcdfg	Zen	2	2400	48¾	68¼	68½	0,1	27
30	E	DC	HG	CI	212	1.75x4.75	5	1040	12¼	171	1045	.....	3.30x2.12	9	3.99x2.25	3.99x2.25	abcdefg	Zen	2½	3200	32	48¾	78	0	28
30	E	DC	HG	CI	212	1.75x4.75	5	1040	12¼	171	1045	.....	3.30x2.12	9	3.99x2.25	3.99x2.25	abcdefg	Zen(2)	2	9000	48	48¾	68½	00,0	29
45	E	DC	HG	Ala	263	2.75x5.53	5	CS	17¾	430	1045	N	4.25x3.25	7	4.50x2.66	3.75x3.48	abcdfg	Ens	2	9000	48	48¾	68½	00,0	29
45	E	DC	HG	Ala	263	2.75x5.53	5	CS	17¾	430	1045	N	4.25x3.25	7	4.50x2.66	3.75x3.48	abcdfg	Ens	2	9400	47	66	66	00,0	30
45	E	DC	HG	Al	263	2.75x5.53	5	1035	17¾	430	1045	N	4.25x3.25	7	4.50x2.66	4.50x3.40	abcdg	Ens	2	11200	106¼	47½	74½	00,0	31
45	E	DC	HG	Al	263	2.75x5.53	5	1035	17¾	430	1045	N	4.33x3.25	6	4.66x2.66	4.66x2.66	abcdefg	Ens	3½	12000	112¼	47½	74½	00,0	32
45	E	DC	HG	Al	263	2.75x5.53	5	1035	17¾	430	1045	N	4.33x3.25	9	4.66x2.66	4.66x2.66	abcdefg	Ens	3½	12000	112¼	47½	74½	00,0	33
30	E	4140	HG	Al	181	1.75x4.75	5	1040	12½	171	1045	.....	3.31x2.13	9	3.99x2.25	3.99x2.25	abcdefg	Ens	3½	3375	32½	49¼	78	0	34
(i)	N	.....	HG	Ala	26.00	.906x3.21	3	DFS	6⅛	32	DFS	.....	2.31x1.25	4	2.69x1.09	2.78x1.22	abcdfgi	R-P	1½	615	21½	30¼	39½	.....	35
(i)	N	.....	HG	Ala	26.00	.906x3.21	3	DFS	6⅛	32	DFS	.....	2.31x1.25	4	2.69x1.09	2.78x1.22	abcdfgi	Car	1½	614	21½	28¼	39½	.....	36
(i)	N	.....	HG	Ala	29.90	.927x3.40	3	DFS	6⅛	34	DFS	.....	2.31x1.25	4	2.69x1.09	2.78x1.22	abcdfgi	R-P	1½	617	21½	28¼	39½	.....	37
(i)	N	.....	HG	Ala	29.90	.927x3.40	3	DFS	6⅛	34	DFS	.....	2.31x1.25	4	2.69x1.09	2.78x1.22	abcdfgi	R-P	1½	622	21½	30¼	39½	.....	38
30	N	.....	HG	Alt	21	.750x2.83	3	3140	6⅛	22	Ste	N	1.75x1.12	3	1.99x1.62	1.99x1.37	acr	Zen	1¼	496*	24½	21½	31⅛	.....	39
30	N	.....	HG	Ala	25	.875x2.92	3	1035	7	29	Ste	N	1.98x1.25	7	2.49x1.53	2.49x1.19	acdr	Zen	1½	626*	24½	24	40	.....	40
30	N	.....	HG	Ala	25	.875x2.92	3	1035	7	29	Ste	Y	1.98x1.25	7	2.49x1.53	2.49x1.15	acdr	Zen	1½	626*	23½	24¼	40	.....	41
30	N	.....	HG	Alt	26	.875x2.92	3	1035	7	29	Ste	Y	1.98x1.25	7	2.49x1.53	2.49x1.15	adr	Zen	1½	626*	27	24¼	40	.....	42
30	N	.....	HG	Alt	26	.875x2.92	3	1035	7	29	Ste	Y	1.98x1.25	7	2.49x1.53	2.49x1.15	acdr	Zen	1½	626*	24½	31⅛	40	.....	43
30	N	.....	HG	Alt	26	.875x2.92	3	1035	7	29	Ste	Y	1.98x1.25	7	2.49x1.53	2.49x1.15	acdr	Zen	1½	626*	24½	31⅛	40	.....	44
30	N	.....	HG	Ala	38	1.00x3.52	3	1040	8	40	Ste	N	1.98x1.50	7	2.49x1.74	2.49x1.15	acr	Zen	1½	850*	26½	25⅞	46⅛	.....	45
30	N	.....	HG	Ala	40	1.12x3.44	3	1040	8	40	Ste	Y	1.98x1.50	7	2.49x1.74	2.49x1.15	acr	Zen	2	850*	26½	25⅞	46⅛	.....	46
30	N	.....	HG	Ala	40	1.12x3.44	3	1040	8	40	Ste	Y	1.98x1.50	7	2.49x1.74	2.49x1.15	acr	Zen	2	850*	26½	25⅞	46⅛	.....	47
30	N	.....	HG	Alt	44	1.12x3.70	4	3140	8½	82	Ste	Y	2.24x1.50	7	2.62x2.21	2.62x1.43	acer	Zen	2	1232*	26½	27½	46⅛	.....	48
30	N	.....	HG	Alt	44	1.12x3.70	4	3140	8½	82	Ste	Y	2.24x1.50	7	2.62x2.21	2.62x1.43	acer	Zen(2)	1¾	1260*	27½	27½	53½	.....	49
30	N	.....	HG	Alt	44	1.31x3.82	4	3140	8½	85	Ste	.....	2.25x1.50	7	2.62x2.21	2.62x1.43	acdr	Zen(2)	1¾	1260*	27½	27½	53½	.....	50
45	E	*	HG	Ala	16.2*	.850x2.89	3	MA	5½	21.2	1046	.....	1.94x1.81	5	2.38x1.81	2.38x1.06	acdfg	Car	1¼	1060*	32½	30⅞	44½	.....	48
45	E	*	HG	Ala	20.9*	.904x3.15	3	MA	6¼	25.2	DFS	.....	2.25x2.00	5	2.50x1.06	2.50x1.13	acdef	Car	1¼	1163*	32½	30⅞	46⅛	N	49
45	E	CMT	HG	Alt	15.7	.859x2.75	4	MS	7½	30.1	DFS	Y	2.06x1.25	4	2.50x1.88	2.50x1.24	acdg	Zen	1½	.....	22½	25½	43½	4	50
45	E	CMT	HG	Alt	15.7	.859x2.75	4	MS	7½	30.1	DFS	Y	2.06x1.25	4	2.50x1.88	2.50x1.24	acdg	Zen	1½	.....	22½	25½	43½	4	51
45	E	CMT	HG	Alt	15.7	.859x2.75	4	MS	7½	30.1	DFS	Y	2.06x1.25	4	2.50x1.88	2.50x1.24	acdg	Zen	1½	.....	22½	26½	46½	4	52
45	E	CMT	HG	Alt	25.0	.859x2.86	4	MS	7.875	32.4	DFS	Y	2.12x1.22	4	2.50x1.88	2.50x1.24	acdg	Zen(2)	1½	.....	28	26½	46½	4	53
45	E	CMT	HG	Alt	25.0	.859x2.86	4	MS	7.875	32.4	DFS	Y	2.12x1.22	4	2.50x1.88	2.50x1.24	acdg	Zen(2)	1½	.....	28½	32½	50½	4	54
45	Bo	Sil*	HG	Alt	33.5	1.13x3.46	4	MS	8½	39.0	DFS	Y	2.31x1.62	7	3.00x2.93	3.00x1.72	acdg	Zen(2)	1½	.....	29½	34½	52½	3,4	55
45	E	St	Ch	Alst	22.2	.859x2.99	3	1335	5¾	22.6	1046	.....	1.94x1.81	5	2.38x1.00	2.38x1.81	abcdg	Car(2)	1½	991	29½	34½	52½	3,4	56
45	E	CMT	Ch	Alst	22.2	.859x2.99	3	1335	5¾	22.6	1043	.....	1.93x1.81	5	2.37x.85	2.37x1.57	acdfg	Ecl(2)	1½	980	30½	28½	29½	3,4	57
45	E	CMT	Ch	Alst	22.2	.859x2.99	3	1335	5.94	22.6	1043	.....	2.06x1.87	5	2.38x.85	2.38x1.57	acdfg	Car(2)	1½	626	28½	29¼	30	3,4	57
45	E	CMT	Ch	Alst	24.6	.921x3.07	3	1335	6.06	26.3	1043	.....	2.06x1.88	5	2.38x1.00	2.38x1.81	abcdfg	Car(2)	1½	629	27	28	32	3,4	58
45	E	CAI	Ch	Alst	24.6	.922x3.07	3	1335	6½	26.3	1046	.....	2.25x2.00	5	2.50x1.06	2.50x1.87	abcdg	Str(2)	1½	945	28½	35½	32½	.....	59
45	E	St	Ch	Alst	28.0	.964x3.15	3	1041	6½	26.2	1046	.....	2.06x1.25	4	2.50x1.44	2.50x1.88	abcdg	Car	1¼	575	20	34½	32½	4	60
45	E	Ste	Ch	CI	32.9	.859x2.75	4	1335	7¾	29.4	1046	.....	2.06x1.25	4	2.50x1.44	2.50x1.88	abcdg	Car	1¼	575	20	34½	32½	4	61
45	E	Ste	HG	CI	32.9	.859x2.75	4	1335	7¾	29.4	1046	.....	2.06x1.25	4	2.50x1.44	2.50x1.88	abcdg	Car	1¼	575	20	34½	32½	4	62
45	E	Ste	Ch	CI	35.6	.859x2.87	4	1335	7¾	33.3	1046	.....	2.13x1.38	4	2.50x1.50	2.50x1.88	abcdg	Car	1¼	740	20	29½	33½	3,4	63
45	E	Ste	HG	CI	35.6	.859x2.87	4	1335	7¾	33.3	1046	.....	2.13x1.38	4	2.50x1.50	2.50x1.88	abcdg	Car	1¼	740	20	29½	33½	3,4	64
45	Bo	St	HG	Alst	45.0	1.12x3.47	4	1041	8¾	50.0	1050	.....	2.31x1.63	4	3.00x2.03	3.00x3.25	abcdg	Car	1¼	1100	24½	41½	47½	1,3	65
45	Bo	St	Ch	Alst	46.3	1.12x3.47	4	1336	8½	51.0	1046	.....	2.50x1.63	7	3.00x2.00	3.00x3.25	abcdg	Car	1¼	925	24½	29½	43½	1,3	66
45	E	Nic	HG	Al	153	1.49x5.37	4	3135	16	244	4140	N	3.50x3.50	3	3.25x3.81	3.25x4.50	acdfg	Zen	2	2300	31½	49¼	67½	1,0	66
45	E	Nic	HG	Al	153	1.49x5.37	4	3135	16	244	4140	Y	3.50x3.50	4	3.25x3.81	3.25x4.50	acdfg	Zen(2)	1½	2200	29½	51½	73½	1,0	67
45	E	Nic	HG	Al	176	2.00x5.75	5	1040	16	279	4140	N	4.00x2.50	7	4.50x3.75	4.50x3.75	abcdfg	Zen	2½	5600	33	57	77½	0	68
45	E	Nic	HG	Al	176	2.00x6.25	5	1040	16	279	4140	N	4.00x5.00	5	4.50x3.75	4.50x3.75	abcdfg	Zen	2½	5400	33	57	77½	0	69
45	E	Nic	HG	Al	256	2.00x6.25	5	1040	16	279	4140	N	4.00x5.00	5	4.50x3.75	4.50x3.75	abcdfg	Zen(2)	2	8200	51	66	72½	00	70
45	E	Nic	HG	Al	176	2.00x5.75	5	3135	16	279	4140	N	4.00x5.00	5	4.50x3.75	4.50x3.50	abcdfg	Zen(2)	2	8400	51	66	99	00	71
45	E	Nic	HG	Al	256	2.00x6.25	5	1040	16	279	4140	N	4.00x5.00	5	4.50x3.75	4.50x3.50	abcdfg	Zen(4)	2	11200	51	66	99	00	72
45	E	Nic	HG	Al	176	2.00x5.75	5	3135	16	276	4140	N	4.50x5.00	7	4.50x3.75	4.50x3.50	abcdfg	Zen(4)	2	11200	51	66	99	00	73
45	E	Nic	HG	Al	256	2.38x6.25	5	1040	16	368	4140	N	4.75x5.25	7	5.50x3.75	5.50x5.00	abcdfg	Zen(4)	2	11600	51	66½	96½	00	74
(h)	E	SA	HG	CI	.....	.843x1.92	3	1035	5¼	.....	DFS	N	1.50x1.02	.....	2.00x	2.00x1.25	.....	.....	.....	.....	17⅞	16	19	19	6	74
(h)	E	SA	HG	Al	.....	.843x1.92	3	1035	5¼	.....	DFS	N	1.50x1.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75
(h)	Op	SA	HG	CI	.....	.843x1.92	3	1035	5¼	.....	DFS	N	1.50x1.00	.....	2.00x1.39	2.00x1.25	.....	Op	Op	170	16	19	19	6	77
(h)	Op	SA	HG	CI	.....	.708x2.06	3	1030	5¼	.....	DFS	N	1.50x1.16	3	1.75x1.37	1.75x1.75	acdgt	Op	Op	268	14⅞	22½	28½	6	78
(h)	Op	SA	HG	CI	.....	.703x2.06	3	1030	5¼	.....	DFS	N	1.50x1.16	3	1.75x1.37	1.75x1.75	acdgt	Op	Op	290	14⅞	22½	28½	6	79

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	VALVES									
				With Bare Engine	With Standard Accessories						Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.)		Min. Port Diameter (In.)		Lift (In.)		Stem Diameter (In.)	
													Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
1	Continental—(Cont.)																			
2	Y-91	Ind	4-27/8x3 1/2	29.5-2400		91.0	6.60	67-1000 (BE)	N	In	L	Op	1.20	1.01	1.06	.875	.296	.281	.314	.313
3	Y-4091	C,Tr	4-3 1/8x3 1/2	36.3-2400		91.0		70-1000 (BE)	N	In	L	Op	1.20	1.01	1.06	.875	.296	.281	.314	.313
4	E291	Ind	4-3 5/8x4 1/8	65.5-2400		201.0	6.30	171-1200 (BE)	W	In	I	Sil	1.46	1.36	1.16	1.19	.339	.339	.341	.339
5	F244	Ind	6-3 1/8x4 1/8	79-2400		244.0	6.90	192-1200 (BE)	N	In	L	XCR	1.52	1.21	1.36	1.19	.329	.334	.341	.339
6	J392	Ind	4-4 1/8x6	79-1500		382.0	5.82	283-1000 (BE)	W	In	I	Sil	1.77	1.65	1.63	1.50	.340	.340	.435	.433
7	Y-112	Ind	4-3 1/8x3 1/2	32-2400		112.0	6.60	82-1400 (BE)	N	In	L	Op	1.20	1.01	1.06	.875	.296	.281	.314	.313
8	F-124	Ind	4-3x4 1/8	36.5-2400		124.0	6.30	91-1200 (BE)	N	In	L	Op	1.51	1.29	1.37	1.18	.281	.281	.341	.334
9	F-4124	C,T,Tr	4-3x4 1/8	47-3200		124.0		94-1600 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.281	.281	.341	.336
10	G-134	Ind	4-3 1/8x4 1/8	32.2-2000		134.0	6.60	104-1000 (BE)			I	Op								
11	F-140	Ind	4-3 1/8x4 1/8	42-2400		140.0	6.40	106-1200 (BE)	N	In	L	Op	1.51	1.29	1.37	1.18	.281	.281	.341	.337
12	F-4140	C,T,Tr	4-3 1/8x4 1/8	52-3200		140.0		108-1600 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.281	.281	.341	.339
13	G-157	Ind	4-3 5/8x4 1/8	37.7-2000		157.0		120-1000 (BE)	W	In	I	Op	1.32	1.20	1.16	1.09	.312	.312	.341	.339
14	F-162	Ind	4-3 1/8x4 1/8	48-2400		162.0	6.40	124-1200 (BE)	N	In	L	Op	1.51	1.29	1.37	1.18	.281	.281	.341	.337
15	F-4162	C,T,Tr	4-3 1/8x4 1/8	58-3200		162.0		122-1600 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.281	.281	.341	.337
16	H-227	Ind	4-3 5/8x5 1/2	84-2000		227.0	5.65	174-1000 (BE)	W	In	I	Op	1.64	1.45	1.50	1.31	.343	.343	.437	.439
17	H-243	Ind	4-3 5/8x5 1/2	89.2-2000		243.0	5.65	186-1000 (BE)	W	In	I	Op	1.64	1.45	1.50	1.31	.343	.343	.437	.427
18	H-268	Ind	4-3 7/8x5 1/2	93-2000		268.0		206-1000 (BE)	W	In	I	Op	1.64	1.45	1.50	1.31	.343	.343	.437	.437
19	F-198	Ind	6-3x4 1/8	80.5-2400		198.0		147-1200 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.296	.296	.341	.337
20	F-4198	C,T,Tr	6-3x4 1/8	77-3600		198.0	6.70	142-1600 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.296	.281	.341	.337
21	F-209	Ind	6-3 1/8x4 1/8	68-2400		209.0		165-1200 (BE)	N	In	L	Op	1.51	1.29	1.37	1.18	.296	.296	.341	.337
22	F-4209	C,T,Tr	6-3 1/8x4 1/8	86-3600		209.0	6.70	160-1600 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.296	.281	.341	.339
23	F-226	Ind	6-3 1/8x4 1/8	73-2400		226.0		178-1200 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.296	.296	.341	.338
24	F-4226	C,T,Tr	6-3 1/8x4 1/8	99-3600		226.0	6.70	180-1600 (BE)	N	In	L	Op	1.51	1.32	1.37	1.18	.296	.281	.341	.338
25	M-271	Ind	6-3 5/8x4 1/8	86.2-2400		271.0		206-1100 (BE)	N	In	L	Op	1.76	1.51	1.62	1.37	.343	.359	.403	.401
26	M-4271	T,B,Tr	6-3 5/8x4 1/8	97-3000		271.0	6.70	209-1400 (BE)	N	In	L	Op	1.76	1.51	1.62	1.37	.343	.359	.404	.402
27	M-290	Ind	6-3 7/8x4 1/8	92.3-2400		290.0		221-1000 (BE)	N	In	L	Op	1.76	1.51	1.62	1.37	.343	.359	.404	.401
28	M-4290	T,B,Tr	6-3 7/8x4 1/8	106-3000		290.0	6.70	226-1400 (BE)	N	In	L	Op	1.76	1.51	1.62	1.37	.343	.359	.404	.402
29	M-330	Ind	6-4x4 1/8	104.4-2400		330.0		251-1100 (BE)	N	In	L	Op	1.76	1.51	1.62	1.37	.343	.343	.404	.402
30	M-4330	T,B,Tr	6-4x4 1/8	125-3000		330.0	6.70	258-1400 (BE)	N	In	L	Op	1.76	1.51	1.62	1.37	.343	.359	.404	.402
31	S-371	Ind	6-4 1/8x4 1/8	110-2400		371.0	6.60	280-1000 (BE)	N	In	L	Op	1.89	1.64	1.75	1.50	.399	.399	.435	.432
32	S-4371	T,B	6-4 1/8x4 1/8	123.5-3000		371.0	6.50	294-1400 (BE)	N	In	L	Op	1.89	1.64	1.75	1.50	.399	.399	.435	.432
33	T-4371	T	6-4 1/8x4 1/8	144-3000		371.0	6.40	297-1400 (BE)	N	In	I	Op	2.06	1.64	1.87	1.50	.406	.406	.437	.432
34	T-371	Ind	6-4 1/8x4 1/8	119-2400		371.0	6.36	286-1200 (BE)	N	In	I	Op	2.06	1.64	1.87	1.50	.406	.406	.437	.432
35	T-427	Ind	6-4 5/8x4 1/8	140-2400		427.0	6.35	335-1000 (BE)	N	In	I	Op	2.06	1.64	1.87	1.50	.406	.406	.437	.432
36	R-427	Ind	6-4 5/8x4 1/8	127-2400		427.0	6.60	322-1000 (BE)	N	In	L	Op	1.89	1.64	1.75	1.50	.399	.399	.435	.427
37	R-4427	T,B,M	6-4 5/8x4 1/8	142-3000		427.0	6.50	328-1200 (BE)	N	In	L	Op	1.89	1.64	1.75	1.50	.399	.399	.435	.432
38	T-4427	T	6-4 5/8x4 1/8	169.5-3000		427.0	6.40	336-1400 (BE)	N	In	I	Op	2.06	1.64	1.87	1.50	.406	.406	.437	.432
39	U-501	Ind	6-4 1/8x5 1/8	186-2400		501.0		386-1200 (BE)	N	In	I	Op	2.14	1.87	2.00	1.63	.374	.374	.435	.432
40	U-4501	T,B,Ind	6-4 1/8x5 1/8	178-2800		501.0	6.20	414-1200 (BE)	N	In	I	Op	2.14	1.87	2.00	1.63	.374	.374	.435	.432
41	R-513	Ind	6-4 1/8x5 1/8	164.3-2400		513.0	6.95	382-1400 (BE)	N	In	I	Op	2.14	1.88	2.00	1.75	.500	.500	.500	.493
42	R-5513	T,B	6-4 1/8x5 1/8	192-2800		513.0	6.80	422-1400 (BE)	N	In	I	Op	2.14	1.88	2.00	1.75	.500	.500	.500	.496
43	R-572	Ind	6-4 5/8x5 1/8	182.4-2400		572.0	6.97	437-1400 (BE)	N	In	I	Op	2.14	1.88	2.00	1.75	.500	.500	.500	.496
44	R-5572	T,B,	6-4 5/8x5 1/8	220-2800		572.0	6.80	464-1200 (BE)	N	In	I	Op	2.14	1.88	2.00	1.75	.500	.500	.500	.496
45	R-602	Ind	6-4 7/8x5 1/8	192-2400		602.0	6.80	460-1400 (BE)	N	In	I	Op	2.14	1.88	2.00	1.75	.500	.500	.500	.496
46	R-5602	T,B	6-4 7/8x5 1/8	232-2800		602.0	6.80	484-1200 (BE)	N	In	I	Op	2.14	1.88	2.00	1.75	.500	.500	.500	.496
47	S-749	Ind	6-5 1/8x5 1/8	217-2200		749.0		570-1200 (BE)	N	In	I	Op	2.39	2.14	2.25	2.00	.562	.562	.497	.496
48	S-6749	T	6-5 1/8x5 1/8	256-2900		749.0		574-1400 (BE)	N	In	I	Op	2.39	2.14	2.25	2.00	.562	.562	.497	.494
49	K-6271	T	6-3 1/8x4 1/8	118-3200		271.0	6.40	216-1400 (BE)	N	In	I	Op	1.96	1.64	1.78	1.56	.443	.406	.435	.432
50	K-6296	T	6-3 1/8x4 1/8	123-3200		296.0	6.40	232-1400 (BE)	N	In	I	Op	1.96	1.64	1.78	1.56	.443	.406	.435	.432
51	K-6330	T	6-4x4 1/8	145-3200		330.0	6.40	266-1800 (BE)	N	In	I	Op	1.96	1.64	1.78	1.56	.443	.406	.435	.432
52	S-6628	T	6-5 1/8x5 1/8	275-2900		628.0		626-1400 (CE)	N	In	I	Op	2.39	2.14	2.25	2.00	.562	.562	.497	.496
53	V-603	Ind	8-4 1/8x4 1/8	220-2800		603.0	7.00	500-1400 (BE)	N	In	I	Aus	2.41	2.02	2.25	1.88	.512	.500	.500	.500
54	V-6603	T,B	8-4 1/8x4 1/8	242-3200		603.0	7.00	500-1400 (BE)	N	In	I	Aus	2.41	2.02	2.25	1.88	.512	.500	.500	.500
55	S-820	Ind	8-4 1/8x5 1/2	237-2200		820.0		625-1000 (BE)	N	In	I	Op	2.39	2.14	2.25	2.00	.562	.562	.497	.496
56	Dearborn																			
57	125	M	8-3 1/8x3 1/8	132-4000	125-4000	239.0	7.20	215-2200 (BE)	N	In	I									
58	145	M	8-3 1/8x3 1/8	147-4000	142-4000	256.0	7.20	228-2500 (BE)	N	In	I									
59	160	M	8-3 1/8x3 1/8	162-4100	157-4000	272.0	7.60	259-2400 (BE)	N	In	I									
60	175	M	8-3 1/8x3 3/8	182-4000	176-4000	292.0	7.60	272-2500 (BE)	N	In	I									
61	Dodge T-334, T-336, T-338, T-342, TS-342, T-361, T-362	T	6-3 1/8x4 1/8	110-3600	106-3600	239.2	7.25	194-1300 (BE)	N	In	L	Sil	1.53	1.41	1.27	1.29	.365	.365	.341	.341
62	T-137, T-164, T-186	T	6-3 1/8x4 1/8	163-3600	91-3200	230.2	7.25	191-1200 (BE)	N	In	L	Sil	1.53	1.41	1.27	1.29	.365	.365	.341	.341
63	TX-342, T-344, TS-344	T	6-3 1/8x4 1/8	126-3600	110-3600	250.6	7.00	210-1200 (BE)	N	In	L	Sil	1.72	1.50	1.50	1.38	.365	.365	.341	.340
64	T-344, T-346, TX-346, TS-346	T	6-3 1/8x4 1/8	126-3600	112-3400	268.4	7.00	225-1200 (BE)	N	In	L	Sil*	1.72	1.50	1.50	1.38	.365	.365	.341	.433
65	T-396	T	6-3 1/8x4 1/8	112-3600	101-3200	250.6	7.00	205-1600 (BE)	N	In	L	Sil	1.72	1.50	1.50	1.38	.365	.365	.341	.340
66	T-386, T-388, TX-388	T	6-3 1/8x4 1/8	114-3600	104-3200	268.4	7.00	216-1200 (BE)	N	In	L	Sil*	1.72	1.50	1.50	1.38	.365	.365	.341	.433
67	T-346, TX-346	T	6-3 1/8x4 1/8	136-3600	127-3600	268.4	7.00	226-1600 (BE)	N	In	L	Sil*	1.72	1.50	1.50	1.38	.365	.365	.341	.433
68	T-382, T-383	T	6-4 1/8x5 1/8	171-3200	162-2900	413.2	6.50	343-1500 (BE)	N	In	L	Sil*	1.94	1.75	1.78	1.44	.421	.396	.372	.434
69	VT-334, VT-336, VT-338	T	8-3 1/8x3 1/8	145-4400	123-4000	241.4	7.50	215-2400 (BE)	N	In	I	Sil	1.72	1.47			.360	.384	.373	.372
70	VTX342,VT344,VT346,VTX346	T	8-3 1/8x3 1/8	169-4400	123-4000	241.4	7.50	228-2600 (BE)	N	In	I	Sil	1.81	1.75			.360	.384	.373	.372
71	VT-348, VTS-348	T	8-3 1/8x3 1/8	153-3600	143-3600	331.1	7.00	288-1600 (BE)	N	In	I	Sil*	1.81	1.75			.382	.331	.373	.433
72	VT-386, VTX-388	T	8-3 1/8x3 1/8	172-4600	157-3600	331.1	7.00	294-1600 (BE)	N	In	I	Sil*	1.81	1.75			.382	.331	.373	.433
73	Fageol																			
74	FTC-196	T,B,Ind	6-4 1/8x5 1/8	190-2800		494.0	7.50	380-1600 (BE)	D	In	I	2112m*	1.81	1.69	1.63	1.56	.388	.388	.373	.373
75	FTC-206	T,B,Ind	6-4 3/8x5	206-2800		461.0	7.29	400-1600 (BE)	D	In	I	2112m*	1.81	1.69	1.63	1.56	.388	.388	.373	.373
76	FTC-210	T,B,Ind	6-4 1/8x5	210-2800		477.0	7.09	400-1650 (BE)	D	In	I	2112m*	1.81	1.69	1.63	1.56	.388	.388	.373	.373
77	*FTC-196	T,B,Ind	6-4 1/8x5 1/8	190-2800		494.0	9.00	380-1600 (BE)	D	In	I	2112m*	1.81	1.69	1.63	1.56	.388	.388	.373	.373
78	*FTC-206	T,B,Ind	6-4 3/8x5	206-2800		461.0	9.00	400-1600 (BE)	D	In	I	2112m*	1.81	1.69	1.63	1.56	.388	.388	.373	.373
79	*FTC-210	T,B,Ind	6-4 1/8x5	210-2800		477.0	9.00	400-1650 (BE)	D	In	I	2112m*	1.81	1.69	1.63	1.56	.388	.388	.373	.373
80	Ford																			
81	172	Tr	4-3 11/16x3 1/2	94.5-2200		172.0	6.75	148-1350 (BE)			I									
82	EAL	T	8-3 1/8x3.5	152-3800	134-3600	278.0	7.20	246-2100 (BE)	N	In	I	CNS	2.01	1.52			.384	.342	.342	.435
83	EAM	T	8-3 1/8x3 1/2	170-3800	151-3600	317.0	7.20	280-2000 (BE)	N	In	I	CNS	2.01	1.52			.384	.342	.342	.435
84	EBR, EBS	T	8-3 1/8x3 1/2	118-4000	109-3600	223.0	7.90	196-1600 (BE)	N	In	I	CNS	1.79	1.52			.329	.325	.342	.341
85	EBT	T	8-3 1/8x3 1/2	116-3600	104-3500	223.0	7.50	194-1800 (BE)	N	In	I	CNS	1.79	1.52			.329	.325	.342	.341
86	EBV, EBW	T	8-3 1/8x3 9/16	132-4200	113-3600	239.0	7.50	215-2000 (BE)	N	In	I	CNS	1.65	1.52			.360	.360	.342	.341
87	EBZ	T	8-3 5/8x3 1/2	148-3800	122-3600	256.0	7.50	226-2150 (BE)	N	In	I	CNS	1.79	1.52			.360	.360	.342	.341

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

GASOLINE ENGINES—*continued*

VALVES				PISTONS				CONNECTING RODS			CRANKSHAFT							CARBURETOR			OVERALL DIMENSIONS (In.)				
Seats														MAIN BEARINGS											
Angle (Deg.)	Inserts Used	Insert Material (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Crank-Pin Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure to—	Make	Size	Engine Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Cylinder Housing (S.A.E. No.)	Line Number
(h)	Op	SA	HG	CI	.....	.708x2.44	3	1030	9¼	.....	DFS	N	1.90x1.19	3	1.75x1.37	1.75x1.75	acdgt	Op	Op	285	14	22½	25½	5	1
(h)	Op	SA	HG	CI	.....	.703x2.44	3	1030	9¼	.....	DFS	N	1.90x1.19	3	1.75x1.37	1.75x1.75	acdgt	Op	Op	290	14	22½	25½	5	2
(h)	E	SA	HG	Al	.....	1.11x3.07	4	1035	9¼	.....	1046	.....	2.25x1.50	3	2.81x1.34	2.81x1.50	acdfg	Op	.....	540	.....	.....	.....	N	3
(h)	E	SA	HG	Al	.....	.859x2.88	4	1035	7	.....	1046	.....	2.06x1.31	4	2.56x1.00	2.56x1.48	acd	Op	.....	.....	.....	.....	.....	.....	4
(h)	E	SA	HG	Al	.....	1.50x3.72	4	1035	10	.....	1046	.....	2.75x1.81	4	3.50x1.88	3.50x2.00	afg	Op	.....	630	.....	.....	.....	N	5
(h)	Op	SA	HG	CI	.....	.706x2.75	3	1030	9¼	.....	DFS	N	1.50x1.10	3	1.75x1.29	1.75x1.88	acdgt	Op	Op	265	14	22½	25½	5	6
(h)	Op	SA	HG	CI	.....	.859x2.50	4	1030	7	.....	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	Op	Op	370	18	26	26	4	7
(h)	Op	SA	HG	CI	.....	.859x2.50	4	1030	7	.....	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	Op	Op	395	26	26	29½	4,3	8
	E	SA	HG	Al	.....			1035	7	.....	DFS	N													9
(h)	Op	SA	HG	CI	.....	.856x2.68	4	1030	7	.....	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	Op	Op	370	26	26	29½	4	10
(h)	Op	SA	HG	CI	.....	.859x2.68	4	1030	7	.....	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	Op	Op	395	26	26	29½	4	11
(h)	Op	SA	HG	Al	.....	1.12x2.75	4	1035	7	.....	DFS	N	2.06x	3	2.37x1.53	2.37x1.50		Op	Op	475	16	19	26	4,3	12
(h)	Op	SA	HG	Al	.....	.859x2.87	4	1030	7	.....	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	Op	Op	370	26	26	29½	8	13
(h)	Op	SA	HG	Al	.....	.859x2.87	4	1030	7	.....	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	Op	Op	395	26	26	29½	4,3	14
(h)	Op	SA	HG	Als	.....	1.25x3.31	4	1035	9½	.....	DFS	N	2.50x1.18	3	2.67x1.61	2.67x2.06	acdg	Op	Op	645	19	33	36		16
(h)	Op	SA	HG	Al	.....	1.25x3.18	4	1035	9½	.....	DFS	N	2.50x1.18	3	2.67x1.61	2.67x2.06	acdg	Op	Op	654	19	33	36		17
(h)	E	SA	HG	Al	.....	1.25x3.18	4	1035	9½	.....	DFS	N	2.50x1.18	3	2.67x1.61	2.67x2.06	acdg			684	19	33	36		18
(h)	Op	SA	HG	Al	.....	.859x2.50	4	1030	7	.....	DFS	N	1.93x1.31	4	2.25x1.18	2.25x1.81	acdgt	Op	Op	395	26	27	36	4	19
(h)	Op	SA	HG	Al	.....	.859x2.50	4	1030	7	.....	DFS	Y	1.93x1.31	4	2.25x1.61	2.25x1.81	acdgt	Op	Op	515	26	27	36	4,3	20
(h)	Op	SA	HG	Al	.....	.859x2.68	4	1030	7	.....	DFS	N	1.93x1.31	4	2.25x1.18	2.25x1.81	acdgt	Op	Op	395	26	27	36	4	21
(h)	Op	SA	HG	Al	.....	.859x2.68	4	1030	7	.....	DFS	Y	1.93x1.31	4	2.25x1.18	2.25x1.81	acdgt	Op	Op	515	26	27	36	4,3	21
(h)	Op	SA	HG	Al	.....	.859x2.81	4	1030	7	.....	DFS	Y	2.06x1.31	4	2.37x1.28	2.37x1.73	acdgt	Op	Op	510	26	27	36	4	22
(h)	Op	SA	HG	CI	.....	.859x2.81	4	1030	7	.....	DFS	Y	2.06x1.31	4	2.37x1.28	2.37x1.81	acdgt	Op	Op	515	26	27	36	4,3	23
(h)	E		HG	Al	.....	1.10x3.06	5	1035	9½	.....	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	Op	Op	720	25	29	42	3	24
(h)	E	SA	HG	Al	.....	1.10x3.06	5	1035	9½	.....	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	Op	Op	765	25	29	42	4,3	25
(h)	E	SA	HG	Al	.....	1.10x3.18	5	1035	9½	.....	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	Op	Op	720	25	29	42	3	26
(h)	E	SA	HG	Al	.....	1.10x3.18	5	1035	9½	.....	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	Op	Op	765	25	29	42	4,3	27
(h)	E	SA	HG	Al	.....	1.10x3.43	5	1035	9½	.....	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	Op	Op	720	25	29	42	3	28
(h)	E	SA	HG	Al	.....	1.10x3.43	5	1035	9½	.....	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	Op	Op	765	25	29	42	4,3	29
(h)	E	St	HG	Al	.....	1.25x3.43	5	1035	9½	.....	DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.62	acdgt	Op	Op	870	26	29	32	2	30
(h)	E	St	HG	Al	.....	1.25x3.43	5	1035	9½	.....	DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	acdgt	Op	Op	870	26	29	43	3,2	31
(n)	E	St	HG	Al	.....	1.25x3.37	5	1035	9½	.....	DFS‡	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	acdg	Op	Op	1070	24	31	48		32
(n)	E	SA		Al	.....	1.25x3.37	5	1035	9½	.....	DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	acdg	Op	Op	1070	24	31	48		33
(n)	E	SA		Al	.....	1.25x3.62	5	1035	9½	.....	DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	acdg	Op	Op	1075	24	31	48		34
(h)	E		HG	Al	.....	1.25x3.43	5	1035	9½	.....	DFS	Y	2.50x1.69	7	2.87x1.65	2.87x2.62	acdfgt	Op	Op	875	26	29	43	2	35
(h)	E	St	HG	Al	.....	1.25x3.43	5	1035	9½	.....	DFS‡	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	acdfgt	Op	Op	875	26	29	43	3,2	36
(n)	E	St	HG	Al	.....	1.25x3.62	5	1035	9½	.....	DFS‡	Y	2.50x1.69	7	2.87x1.65	2.87x2.71	acdg	Op	Op	1070	24	31	48		37
(h)	E	SA		Al	.....	1.50x3.72	5	1035	10½	.....	DFS	Y		7	2.75x1.75	2.75x2.81	acdg				26½	37½	47	2	38
(h)	E	St	HG	Al	.....	1.50x3.72	5	1035	10½	.....	DFS‡	Y		7	2.75x1.75	2.75x2.81	acdg	Op	Op		39½	37½	47	2	39
(h)	E		HG	Al	.....	1.50x3.72	5	1035	10½	.....	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfgt	Op	Op	1580				1	40
(h)	E	St	HG	Al	.....	1.50x3.72	5	1035	10½	.....	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdg	Op	Op	1525				2	41
(h)	E		HG	Al	.....	1.50x3.72	5	1035	10½	.....	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfgt	Op	Op	1560				1	42
(h)	E	St	HG	Al	.....	1.50x3.72	5	1035	10½	.....	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfg	Op	Op	1525				2	43
(h)	E	St	HG	Al	.....	1.50x3.72	5	1035	10½	.....	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.76	acdfg	Op	Op	1560				1	44
(h)	E	St	HG	Al	.....	1.50x3.72	5	1035	10½	.....	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfgt	Op	Op	1525				2	45
(h)	E	St		Al	.....	1.75x4.53	5	8640	10½	.....	DFS‡	Y		7	3.75x1.12	3.75x3.12	acdg	Op	Op		31	47	57	0	46
(h)	E	St		Al	.....	1.75x4.53	5	8640	10½	.....	DFS‡	Y		7	3.75x1.87	3.75x3.12	acdg	Op	Op	1965	31	47	57	1	47
(n)	E	St	HG	Al	.....	1.10x3.06	5	1035	9½	.....	DFS‡	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdfg	Op	Op					3	48
(n)	E	St	HG	Al	.....	1.10x3.18	5	1035	9½	.....	DFS‡	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdfg	Op	Op					3	49
(n)	E	St	HG	Al	.....	1.10x3.43	5	1035	9½	.....	DFS‡	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdfg	Op	Op					3	50
(h)	E	St	HG	Al	.....	1.75x4.53	5	8640	10½	.....	DFS‡	Y		7	3.75x1.87	3.75x3.12	acdg	Op	Op						51
(h)	E	AS	HG	Al	.....	1.50x3.97	4	8637	9½	46.8	1046	.....	3.13x3.13	5	3.50x1.63	3.50x2.75	abcdfg		15						52
(h)	E	AS	HG	Al	.....	1.50x3.97	4	8637	9½	46.8	1046	.....	3.13x3.13	5	3.50x1.63	3.50x2.76	abcdfg		15	1788	32	33½	44	2	53
(h)	E	St	HG	Al	.....	1.75x4.53	5	8640	10½	.....	DFS‡	.....		7	3.75x1.87	3.75x3.12	abcdfg	Op	.....						54
.....	.....	.....	Ch	Als	.....	.....	3	.....	.....	.....	.....	.....	.....	5	.....	.....	acdf	Car	1	630*	27	24½	39	.....	55
.....	.....	.....	Ch	Als	.....	.....	3	.....	.....	.....	.....	.....	.....	5	.....	.....	acdf	Car	1	630*	27	24½	39	.....	56
.....	.....	.....	Ch	Als	.....	.....	3	.....	.....	.....	.....	.....	.....	5	.....	.....	acdf	Car	1	643*	27	24½	39	.....	57
.....	.....	.....	Ch	Als	.....	.....	3	.....	.....	.....	.....	.....	.....	5	.....	.....	acdf	Car	1	643*	27	24½	39	.....	58
45	E	SA	Ch	Al	16**	.899x2.75	4	MS	7	.....	CS	.....	2.06x1.00	4	2.50x1.17	2.50x1.59	acdg	BB	1	490	24	30	29	.....	59
45	E	SA	Ch	Al	16**	.859x2.75	4	MS	7	.....	CS	.....	2.06x1.00	4	2.50x1.17	2.50x1.59	acdg	BB	1	510	(v)	(w)	(y)	.....	60
45	E	SA	Ch	Al	18.5**	.859x2.88	3	MS	7	.....	CS	.....	2.13x1.00	4	2.50x1.16	2.50x1.90	acdg	BB	1	525	25	27	32	.....	61
45	E	SA	Ch	Al	18.5**	.859x2.88	3	MS	7	.....	CS(q)	.....	2.13x1.00	4	2.50x1.16	2.50x1.90	acdg	BB	1	525	26	27	32	.....	62
45	E	SA	Ch	Al	18.5**	.859x2.88	3	MS	7	.....	CS	.....	2.13x1.00	4	2.50x1.16	2.50x1.90	acdg	BB	1	525	24	31	32	.....	63
45	E	SA	Ch	Al	18.5**	.859x2.88	3	MS	7	.....	CS(q)	.....	2.13x1.00	4	2.50x1.16	2.50x1.90	acdg	BB	1	525	24	31	32	.....	64
45	E	SA	Ch	Al	18.5**	.859x2.88	3	MS	7	.....	CS(q)	.....	2.13x1.00	4	2.50x1.16	2.50x1.90	acdg	BB(2)	1	525	25	27	32	.....	65
45	E	SiH†	HG	Al	33.5**	1.13x3.47	4	MS	8	.....	CS(q)	.....	2.56x1.34	7	3.00x1.72	3.00x1.93	acdfg	BB	1	1180	28	36	42	.....	66
45	N		Ch	Al	16.4**	.899x2.88	3	MS	5	.....	CS	.....	1.94x.811	5	2.38x.820	2.38x1.53	acdfg	Str	1	585				.....	67
45	E	CMT	Ch	Al	16.4**	.899x2.88	3	MS	6	.....	CS(q)	.....	1.94x.811	5	2.38x.820	2.38x1.53	acdfg	Str	1	600				.....	68
45	Be	SiH†	HG	Al	20.8**	.904x3.15	3	MS	6	.....	CS(q)	.....	2.25x.906	5	2.50x.875	2.50x1.60	acdfg	BB	1	700				.....	69
45	Be	SiH†	HG	Al	20.8**	.904x3.15	3	MS	6	.....	CS(q)	.....	2.25x.906	5	2.50x.875	2.50x1.60	acdfg	Car	1	710				.....	70
45	E	71360*	Ch	Alt	53.5	1.25x3.62	4	SF	6	63.0	CS	Y	2.49x1.69	7	2.63x1.81	2.63x1.81	acdefg	Hel	1	962	33	36	48	1,2,3	71
45	E	71360*	Ch	Alt	54.0	1.25x3.62	4	SF	6	63.0	CS	Y	2.49x1.69	7	2.63x1.81	2.63x1.81	acdefg	Hel	1	962	33	36	48	1,2,3	72
45	E	71360*	Ch	Alt	54.0	1.25x3.87	4	SF	6	63.0	CS	Y	2.49x1.69	7	2.63x1.81	2.63x1.81	acdefg	Hel	1	962	33	36	48	1,2,3	73
45	Be	71360*	Ch	Alt	53.5	1.25x3.62	4	SF	6	63.0	CS	Y	2.49x1.69	7	2.62x1.81	2.63x1.81	acdefg	Alg	1	962	33	36	48	1,2,3	74
45	Be	71360*	Ch	Alt	54.0	1.25x3.62	4	SF	6	63.0	CS	Y	2.49x1.69	7	2.63x1.81	2.63x1.81	acdefg	Alg	1	962	33	36	48	1,2,3	75
45	Be	71360*	Ch	Alt	56.8	1.25x3.87	4	SF	6	63.0	CS	Y	2.49x1.69	7	2.63x1.81	2.63x1.81	acdefg	Alg	1	962	33	36	48	1,2,3	76
.....	.....	.....	HG	Als	.....	.....	3	SF	.....	.....	Al	Y	.....	3	.....	.....	abcdfgi†	Mal	.....	.....	.....	.....	.....	.....	77
45	E	Eat	Ch	Alet	.....	.912x3.92	4	SF	7	28.3	Al	.....	2.25x1.88	5	2.62x1.79	2.62x2.00	acdf	Own	.....	.....	31	35	31	.....	78
45	E	Eat	Ch	Alet	.....	.912x3.17	4	MS	7	28.3	Al	.....	2.25x1.88	5	2.62x1.79	2.62x2.00	acdf	Own	.....	.....	31	35	31	.....	79
45	N		Ch	Alet	.....	.912x3.92	3	SF	6	29.6	Al	.....	2.30x1.25	4	2.50x1.17	2.50x1.64	acdf	Own	.....	.....	.....	33	33	.....	80
45	N		Ch	Alet	.....	.912x3.62	3	SF	6	29.6	Al	.....	2.30x1.25	4	2.50x1.17	2.50x1.64	acdf	Own	.....	.....	.....	33	33	.....	81
45	N		Ch	Alet	.....	.912x2.96	3	SF	6	24.1	Al	.....	2.19x1.76	5	2.50x1.00	2.50x1.22	acdf	Own	.....	.....	28	36	31	.....	82
45	N		Ch	Alet	.....	.912x3.62	3	SF	6	24.1	Al	.....	2.19x1.76	5	2.50x1.00	2.50x1.22	acdf	Own	.....	.....	28	33	31	.....	83

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 243

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	VALVES									
				With Bare Engine	With Standard Accessories						Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.)		Min. Port Diameter (In.)		Lift (In.)		Stem Diameter (In.)	
													Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
1	Ford—Cont'd. 8MNN-254	Ind	8-3.8x4.4	112-3600	101-3200	254.9	6.86	217-1550 (BE)	N	In	L	CNS	1.65	1.51	1.46	1.34	.350	.350	.341	.341
2	JB6	Ind	8-3.8x3½	170-3900		317.0	7.20	286-1700 (BE)	N	In	I	CNS	1.81	1.52	1.56	1.30	.335	.319	.343	.342
3	JC6	Ind	8-3.96x3½	182-3900		279.0	7.20	246-1800 (BE)	N	In	I	CNS	1.81	1.52	1.56	1.30	.335	.319	.343	.342
4	JD6	Ind	6-3.9x3.9	62-3000		172.9	6.75	147-1400 (BE)	D	In	I	CNS	1.65	1.52	1.46	1.26	.356	.337	.343	.342
5	JE5	Ind	6-3.44x3.8	49-3000		134.0	6.90	110-1400 (BE)	D	In	I	CNS	1.65	1.52	1.46	1.26	.356	.337	.343	.342
6	JF5	Ind	6-3.62x3.8	115-3800		223.0	7.20	193-1800 (BE)	N	In	I	Nic	1.79	1.52	1.46	1.26	.334	.343	.342	.341
7	JG5	Ind	8-3½x3.1	130-4000		238.6	7.20	214-1800 (BE)	N	In	I	CNS	1.65	1.52	1.46	1.30	.350	.350	.342	.341
8	JH5	Ind	8-3.62x3.1	140-4000		256.0	7.20	225-1900 (BE)	N	In	I	CNS	1.79	1.52	1.46	1.30	.350	.343	.342	.341
9	G.M.C. 248	T	6-3⅛x3⅛	125-3600	115-3400	248.5	7.50	210-1200 (BE)	N	In	I	Sil	1.64	1.47	1.31	1.15	.395	.380	.341	.340
10	270	T	6-3⅛x4	137-3600	124-3400	288.5	7.50	235-1200 (BE)	N	In	I	Sil	1.64	1.43	1.31	1.15	.395	.380	.341	.340
11	302	T	6-4x4	145-3600	131-3400	301.6	7.20	262-1200 (BE)	N	In	I	Aus	1.96	1.96	1.56	1.18	.395	.380	.341	.341
12	360	T	8-4⅛x3⅝	155-3200	140-3000	360.8	6.50	297-1000 (BE)	N	So	I	Aus[6]	2.00	1.56	1.63	1.36	.403	.384	.372	.434
13	426	T	8-4⅛x5	177-3200	154-2800	425.6	6.50	342-1200 (BE)	N	So	I	[6](x)	2.06	1.69	1.75	1.50	.462	.463	.372	.434
14	503	T	8-4⅛x5½	205-3000	181-2800	502.7	6.50	422-1200 (BE)	N	So	I	[6](x)	2.06	1.69	1.75	1.50	.462	.463	.372	.434
15	270	B	6-3⅛x4	125-3400	108-3200	269.5	7.50	[23]210-1900 (BE)	N	In	I	Sil	1.64	1.43	1.31	1.15	.395	.380	.341	.340
16	Gray Marine Light 4-69	M	4-2½x3½			28-1800	69.0	6.87	476-1400 (EA)	N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.313
17	Seasoout 4-91	M	4-2⅞x3½			25-2000	91.0	7.45		N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.313
18	Lugger 4-112	M	4-3x3½			31-2000	112.0	8.00		N	In	L	Sil	1.20	1.02	1.06	.900	.284	.284	.313	.313
19	Lugger 4-182	M	4-3½x4½			42-1900	162.9	6.50		N	In	L	Sil	1.51	1.33	1.37	1.18	.331	.331	.340	.381
20	Lugger 6-226	M	6-3x4½			73-2400	226.0	6.75		N	In	L	Sil	1.51	1.33	1.37	1.18	.284	.284	.340	.340
21	Lugger 6-244	M	6-3⅛x4½			83-2400	244.0	6.22		N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.338	.338
22	Lugger 6-330	M	6-4x4½			96-2400	330.0	6.00		N	In	L	Sil	1.76	1.51	1.62	1.37	.339	.339	.404	.401
23	Express 4-69	M	4-2½x3½			28-3200	69.0	8.20		N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.314
24	Express 4-182	M	4-3½x4½			63-3000	162.0	7.00		N	In	L	Sil	1.51	1.33	1.37	1.18	.331	.331	.340	.339
25	Express 6-226	M	6-3x4½			92-3200	226.0	6.75		N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.340	.342
26	Express 6-244	M	6-3⅛x4½			102-3200	244.0	7.00		N	In	L	Sil	1.70	1.42	1.56	1.31	.357	.357	.338	.332
27	Express 6-330	M	6-4x4½			124-3200	330.0	7.25		N	In	L	Sil	1.76	1.51	1.62	1.37	.354	.354	.404	.401
28	Express 6-427	M	6-4⅛x4½			152-2800	427.0	6.73		N	In	L	Sil	1.89	1.64	1.75	1.56	.359	.359	.434	.438
29	Super 6-330	M	6-4x4½			156-2800	330.0	7.75		N	In	L	Sil(x)	1.89	1.59	1.62	1.37	.354	.354	.404	.431
30	Phantom 4-45	M	4-2⅞x3½			45-3600	91.0	7.45		N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.314
31	Phantom 4-75	M	4-3x3½			75-3600	102.0	8.00		N	In	L	Sil	1.64	1.45	1.37	1.18	.331	.331	.340	.313
32	Phantom 6-112	M	6-3x3½			115-3600	226.0	8.00		N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.340	.339
33	Phantom 6-135	M	6-3⅛x3½			135-3600	244.0	8.00		N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.338	.343
34	Fireball 4-86	M	4-2⅞x3½			86-4000	91.0	7.45		N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.333
35	Fireball 4-99	M	4-3x3½			99-4000	102.0	8.00		N	In	L	Sil	1.64	1.45	1.16	1.07	.331	.331	.340	.318
36	Fireball 6-140	M	6-3x3½			140-4000	244.0	9.00		N	In	L	Sil	1.70	1.59	1.43	1.31	.360	.360	.338	.339
37	629	M	4-3⅞x3½			69-3200	140.0	7.05	99-2400 (EA)	N	In	L	Sil	1.51	1.33	1.37	1.18	.331	.331	.341	.339
38	Fireball 6-160	M	6-3⅞x3½			160-4000	244.0	9.1		N	In	L	Sil	1.70	1.59	1.43	1.31	.360	.360	.338	.371
39	100	M	6-3⅞x3½			100-3400	226.0	8.00		N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.340	.339
40	110	M	6-3⅞x3½			110-3600	226.0	8.00	1085-2900 (EA)	N	In	L	Sil	1.51	1.33	1.37	1.18	.348	.332	.340	.339
41	115	M	6-3⅞x3½			115-3400	244.0	7.70		N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.338	.343
42	150	M	6-4x4½			150-3400	330.0	7.75		N	In	L	Sil(x)	1.89	1.59	1.62	1.37	.354	.354	.403	.401
43	165	M	6-4x4			165-3400	303.0	8.00	286-1400 (EA)	N	In	L	Sil	1.89	1.59	1.62	1.37	.354	.354	.404	.431
44	175	M	6-4x4			175-3400	363.0	8.00	316-1400 (EA)	N	In	L	Sil	1.89	1.59	1.62	1.37	.354	.354	.404	.431
45	185	M	6-4⅛x4⅛			185-3400	427.0	7.20	352-1200 (EA)	N	In	L	Sil	2.16	1.77	2.02	1.63	.359	.359	.434	.431
46	260	M	8-4⅛x4⅛			206-3400	427.0	7.20	388-1200 (EA)	N	In	L	Sil	2.16	1.77	2.02	1.63	.359	.359	.434	.431
47	Hall-Scott (H) 904	T,B	6-4½x5	180-2500	162-2500	504.0	6.00	425-1600 (BE)	W	In	I	2112	2.15	2.02	2.00	1.75	.495	.495	.438	.434
48	(m) (H) 180-1-3-5	B,T	6-5x6	200-2200	188-2100	707.0	6.00	540-1500 (BE)	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.487	.526
49	(m) (H) 180-2-3-5	B,T	6-5½x6	220-2200	208-2200	779.0	5.60	625-1300 (BE)	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.487	.526
50	(m) 400	Ind	6-5½x7	280-2800	262-2800	1090.0	5.70	930-1300 (BE)	N	Se	I	2112	2.63	2.38	2.38	2.02	.547	.547	.487	.526
51	Defender 2266-67	M	12-5½x7		995-2100	2181.0	6.50		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.487	.526
52	Defender 2266-68	M,Ind	12-5½x7		838-2100	2181.0	6.50		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.487	.526
53	1091-G-1, (m) 1091-B-1	T,Ind	6-5½x7	332-2200	308-2200	1090.0	6.40	960-1200 (BE)	N	So	I	2112	2.62	2.37	2.38	2.02	.547	.547	.487	.526
54	935-G-1, (m) 935-B-1	T,Ind	6-5½x6	295-2400	270-2400	935.0	6.40	800-1400 (BE)	N	So	I	2112	2.62	2.37	2.38	2.02	.547	.547	.487	.526
55	590-GV-1	B,T,Ind	6-5x5	220-2900	205-2900	590.0	6.60	510-1800 (BE)	N	So	I	2112	2.37	2.37	2.14	2.14	.500	.500	.496	.496
56	*590-BV-1	B,T,Ind	6-5x5	220-2900	205-2900	590.0	9.00	510-1800 (BE)	N	So	I	2112	2.37	2.37	2.14	2.14	.500	.500	.496	.496
57	590-GH-1	B,T,Ind	6-5x5	220-2900	205-2900	590.0	6.60	510-1800 (BE)	N	So	I	2112	2.37	2.37	2.14	2.14	.500	.500	.496	.496
58	*590-BH-1	B,T,Ind	6-5x5	220-2900	205-2900	590.0	9.90	510-1800 (BE)	N	So	I	2112	2.37	2.37	2.14	2.14	.500	.500	.496	.496
59	Hercules BXB	M,Tr,Ind	2-27/32x3	19-2300	8.5-2300	39.0	6.00	28-1200 (BE)	N	In	L	Aus	1.30	1.05	1.12	.875	.280	.280	.248	.248
60	NXA	M,Tr,Ind	2-3x4	13-2000	11-2000	56.5	6.29	38-1100 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
61	NXB	M,Tr,Ind	2-3½x4	15.6-2000	13-2000	66.3	6.20	46-1100 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
62	ZXA	M,T,Tr,Ind	4-2½x3	22.5-4000	19-4000	89.0	6.30	36-2200 (BE)	N	In	L	Aus	1.30	1.05	1.12	.875	.280	.280	.248	.248
63	ZXB	T,Tr,M,Ind	4-2⅝x3	23-4000	21-4000	98.0	6.30	46-2200 (BE)	N	In	L	Aus	1.30	1.05	1.12	.875	.280	.280	.248	.248
64	IXA	T,Tr,M,Ind	4-3x4	46-3200	34-3200	113.0	6.50	78-1800 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
65	IXB	T,Tr,M,Ind	4-3½x4	46-3200	39-3200	133.0	6.50	92-1800 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
66	IXLB	T,Tr,M,Ind	4-3½x4½	49-3200	42-3200	141.0	6.50	97-1800 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
67	JX4E	T,Tr,M,Ind	4-3½x4½	52-2900	44-2900	164.8	6.70	121-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
68	JX4C	T,Tr,M,Ind	4-3⅝x4½	60-2900	51-2900	188.8	6.70	139-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
69	JX4D	T,Tr,M,Ind	4-4x4½	68-2900	57-2900	214.9	6.70	157-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
70	QXA	T,B,Tr,M,Ind	6-3½x4½	64-3200	54.5-3200	198.0	6.50	132-1300 (BE)	N	In	L	2112N	1.40	1.40	1.31	1.12	.311	.311	.310	.310
71	QXB	T,B,Tr,M,Ind	6-3⅝x4½	69-3200	59-3200	205.0	6.50	142-1400 (BE)	N	In	L	2112N	1.40	1.40	1.31	1.12	.311	.311	.310	.310
72	QXC	T,B,Tr,M,Ind	6-3⅞x4½	77.5-3200	66-3200	221.0	6.50	159-1400 (BE)	N	In	L	2112N	1.64	1.64	1.50	1.25	.311	.311	.310	.310
73	QXD	T,B,Tr,M,Ind	6-4x4½	78.4-3200	70-3200	230.0	6.30	167-1500 (BE)	N	In	L	2112N	1.64	1.64	1.50	1.25	.311	.311	.310	.310
74	QXLD	T,B,Tr,M,Ind	6-4⅛x4½	92-3200	77-3200	238.7	6.50	190-1400 (BE)	N	In	L	2112N	1.64	1.64	1.50	1.25	.311	.311	.310	.310
75	JXE	T,B,Tr,M,Ind	6-3½x4½	91-3200	77-3200	245.9	6.50	184-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
76	JXB	T,B,Tr,M,Ind	6-3⅝x4½	98-3200	83-3200	263.0	6.50	190-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
77	JXC	T,B,Tr,M,Ind	6-3⅞x4½	103-3200	87.5-3200	282.0	6.50	207-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
78	JXD	T,B,Tr,M,Ind	6-4x4½	113-3200	96-3200	320.0	6.50	240-1200 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
79	JXLD	T,B,Tr,M,Ind	6-4⅛x4½	131-3200	111-3200	339.0	6.50	272-1400 (BE)	N	In	L	2112N	1.83	1.67	1.72	1.50	.356	.356	.373	.373
80	WXC-3	T,B,Tr,M,Ind	8-4½x4½	131-2800	111-2800	363.0	6.50	296-1400 (BE)	N	In	L	2112N	1.67	1.75	1.62	1.56	.360	.360	.373	.373
81	WXLC	T,B,Tr,M,Ind	8-4⅝x4½	123-2800	104-2800	398.0	6.50	275-1300 (BE)	N	In	L	3140	1.87	1.75	1.68	1.62	.360	.360	.373	.373
82	WXLC-3	T,B,Tr,M,Ind	8-4⅛x4½	139-2800	119-2800	404.0	6.50	312-1300 (BE)	N	In	L	2112	1.90	1.78	1.78	1.62	.360	.360	.373	.373
83	TDXB	T,B,Tr,M,Ind	8-4⅝x4½	161-2800	137-2800	474.0	6.50	366-1300 (BE)	N	In	L	2112	2.06	2.00	1.87	1.75	.360	.360	.435	.435
84	TDXC	T,B,Tr,M,Ind	8-4⅞x4½	178-2800	148-2800	501.0	6.50	386-1300 (BE)	N	In	L	2112	2.06	2.00	1.87	1.75	.360	.360	.435	.435
85	RXB	T,B,Tr,M,Ind	8-4½x4½	137-2400	116-2400	461.0	6.30	350-1200 (BE)	N	In	L	2112N	2.06	2.00	1.75	1.75	.360	.360	.373	.373

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

GASOLINE ENGINES—*continued*

VALVES				PISTONS				CONNECTING RODS			CRANKSHAFT								CARBURETOR			OVERALL DIMENSIONS (In.)				
Seats													Crank-Pin	MAIN BEARINGS												
Angle (Deg.)	Inserts Used?	Insert Material (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure to—	Make	Size	Engines Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. Nos.)	Line Number
45	E	MCS	Ch	Alst	32	.927x3.02	4	MS	7	29.4	Al		2.25x1.87	5	2.62x1.79	2.62x2.00	acdfg	Hol/	1½	700	31	41	48	3	1
45	E	MCS	HG	Alst		.912x3.17	3	MS	6	29.6	Al		2.30x1.25	3	2.50x1.30	2.50x1.30	acdfg	MoS		480	18	27	31	3,4,5	2
45	E	MCS	HG	Alst		.912x2.85	3	MS	6	29.6			2.30x1.25	3	2.50x1.30	2.50x1.30	acdfg	MoS		480	18	27	31	3,4,5	3
45	N	N	Ch	Alst	25	.912x2.90	3	MS	6	24	Al		2.19x1.76	5	2.50x1.17	2.50x1.22	acdfg	Hol/	1	606	28	30	31	3,4	4
45	N	N	Ch	Alst	26	.912x3.03	3	MS	6	30.5	Al		2.30x1.25	4	2.50x1.30	2.50x1.64	acdfg	Hol	1½	607	23	29	36	3,4	6
45	E	MCS	Ch	Alst	26	.912x3.02	3	MS	6	24	Al		2.19x1.76	5	2.50x1.17	2.50x1.22	acdfg	Hol/	1½	620	28	31	31	3,4	6
			HG	Als			3	SF			Al	Y		3			abcdfgit	MoS							7
45	N		Ch	Alst		.912x3.02	3	SF	6	29.6	Al		2.30x1.25	4	2.50x1.17	2.50x1.64	acdf	Own				23	33			8
30	N		HG	Al	39	.990x3.25	4	1141	7	35	1046	Y	2.31x1.44	4	2.69x1.25	2.78x1.53	abcdfg	Zen	1½		26	33	41			9
30	N		HG	Al	41	.990x3.25	4	1141	7	35	1046	Y	2.31x1.44	4	2.69x1.25	2.78x1.53	abcdfg	Zen	1½		26	35	41			10
(h)	N		HG	Al	43	.990x3.50	4	1141	7	35	1046	Y	2.31x1.44	4	2.69x1.25	2.78x1.53	abcdfg	Hol	1½		26	34	40½			11
(h)	E	AS	HG	Al	60	1.12x3.63	4	1340	9½	51	5046	Y	2.37x1.62	7	2.75x2.26	2.75x2.37	abcdfg	Hol	1½		31½	38½	47½	3		12
(h)	E	AS	HG	Al	62	1.25x3.71	4	1340	10½	67	5046	Y	2.62x1.75	7	3.00x2.25	3.00x2.80	abcdfg	Hol	1½		38½	41	48½	3		13
(h)	E	AS	HG	Al	67	1.25x3.96	4	1340	10½	67	5046	Y	2.62x1.75	7	3.00x2.25	3.00x2.90	abcdfg	Zen	1½		38½	41	48½	3		14
30	AS		HG	Al	41	.990x3.25	4	1141	7	35	1046	Y	2.31x1.44	4	2.69x1.25	2.78x1.53	abcdfg	Zen	1½		26	35	41			15
(h)	N		HG	CI		.788x2.06	3	1030	5½		1045	N	1.43x1.06	3	1.75x6.75	1.75x1.32	acd	Zen	1	370	17½	19½	31			16
(h)	N		HG	Al		.703x2.43	3	1030	5½		1045	N	1.5x1.18	3	1.75x1.76	1.75x1.37	acdr	Zen	1	385	17½	19½	31			17
(h)	N		HG	Al		.708x2.75	3	1030	5½				1.50x1.00	3	1.75x1.43	1.75x1.21	acdr	Zen	1	400	17½	19½	31			18
(h)	N		HG	Al		.859x2.89	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1½	565	19½	22½	35			19
(k)	N		HG	CI		.859x2.81	4	CS	7		1045	Y	2.06x1.31	4	2.37x1.73	2.37x1.28	acdr	Zen	1½	710	19½	22½	40			20
45	N		HG	Al		.859x2.87	4	CS	8½		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	825	23½	23½	44			21
(k)	N		HG	Al		1.10x3.43	5	CS	8½		1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Str	1½	1070	24½	25½	49			22
(h)	N		HG	CI	64	.703x2.43	3	1035	5½		1045		1.50x1.18	3	1.75x1.76	1.75x1.37	acd	Zen	1	370	17½	19½	31			23
(h)	N		HG	Al		.859x2.68	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1½	565	19½	22½	35			24
(k)	N		HG	Al		.859x2.81	4	CS	7		1045	Y	2.06x1.31	4	2.37x1.79	2.37x1.28	acdr	Zen	1½	710	19½	22½	40			25
45	N		HG	Al		.859x2.87	4	CS	8½		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	825	23½	23½	44			26
(k)	N		HG	Al		1.10x3.43	5	CS	8½		1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Str	2	1070	24½	25½	49			27
(k)			HG	Al		1.25x3.63	5	CS	8½		1045	Y	2.5x1.68	7	2.87x2.71	2.87x1.65	acdr	Str	2	1250	25½	25½	54			28
(k)	N		HG	Al		1.10x3.43	5	CS	8½		1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Str(2)	1½	1070	24½	25½	49			29
(h)	N		HG	Al		.703x2.43	3	CS	5½		1045	N	1.5x1.18	3	1.75x1.76	1.75x1.37	acdr	Zen	1½	380	17½	19½	31			30
(h)	N		HG	Al		.859x2.68	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1½	540	23½	22½	35			31
(k)	N		HG	Al		.859x2.81	4	CS	7		1045	Y	2.06x1.31	4	2.37x1.73	2.37x1.28	acdr	Zen	1½	675	21½	23½	41			32
45	N		HG	Al		.859x2.87	4	CS	8½		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	800	25½	23½	44			33
(h)	N		HG	Al		.703x2.43	3	CS	5½		1045	N	1.5x1.18	3	1.75x1.76	1.75x1.37	acdr	Zen	1½	395	17½	19½	31			34
(h)	N		HG	Al		.859x2.68	4	CS	7		1045	N	1.93x1.31	3	2.25x1.89	2.25x1.16	acdr	Zen	1½	540	21½	22½	35			35
45	N		HG	Al		.859x2.87	4	CS	8½		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	800	25½	23½	44			36
(k)	N		HG	Al	28	.859x2.68	4	1035	7	28			1.94x1.31	3	2.25x1.89	2.25x1.31	acd	Car	1½	525	19½	21½	34			37
45	N		HG	Al		.859x2.87	4	CS	8½		1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	785	27½	23½	44			38
(k)	N		HG	Al		.859x2.81	4	1030	7		1045		2.06x1.31	4	2.37x1.73	2.37x1.28	acdr	Zen	1½	660	21½	23½	41			39
(k)	N		HG	Alt	32	.859x2.81	4	1035	7		1045		2.06x1.31	4	2.37x1.73	2.37x1.28	acd	Str	1½	708	22	27	41			40
45	N		HG	Al		.859x2.87	4	1035	8½		1045		2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	785	25½	23½	44			41
(k)	N		HG	Al		1.10x3.43	5	1035	8½		1045		2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Zen	2	1050	24½	25½	49			42
(k)	N		HG	Alt		1.10x3.43	5	1035	8½		1046		2.25x1.56	7	2.62x2.18	2.62x1.56	acd	Zen		1050*	24½	25½	48½			43
(k)	N		HG	Alt		1.10x3.43	5	1035	8½		1046		2.25x1.56	7	2.62x2.18	2.62x1.56	a	Zen		1070*	24½	25½	48½			44
(k)	N		HG	Alt		1.25x3.63	5	1035	8½		1045		2.50x1.65	7	2.87x2.71	2.87x1.65	a	Zen		1245*	28½	27½	51½			45
(k)	N		HG	Alt		1.25x3.63	5	1035	8½		1046		2.50x1.65	7	2.87x2.71	2.87x1.65	a	Zen		1250*	28½	27½	51½			46
(h)	E	4140*	Ch	Al	74.4	1.12x3.90	4	3135	11	79.1	4140	Y	2.62x2.00	6	3.00x1.46	3.00x2.28	acdef	Zen	2	1275*	58½	29½	70½	2		47
(h)	E	4140*	Ch	Al	96	1.37x4.20	4	3135	11	104	4140	Y	2.75x2.44	7	3.25x2.19	3.25x2.56	acdefg	Zen	2	1798*	54½	22	71½	1,2		48
(h)	E	4140*	Ch	Al	101	1.37x4.44	6	3135	11	104	4140	Y	2.75x2.44	7	3.25x2.19	3.25x2.90	acdefg	Zen	2	1798*	54½	22	71½	1,2		49
(h)	E	4140*	HC	Al	126	1.37x4.93	5	3140	12	132	4140	Y	3.00x2.43	7	3.25x2.09	3.25x3.12	acdefg	Zen	2½	2150*	28	44½	60½	1,2,0		50
30	E	4140*	HC	Al	126	1.37x4.94	5	3140	12	237+	4140	Y	3.00x2.43	7	3.25x2.09	3.25x2.09	acdefgr	Zen(3)	2½	4560*	43½	50½	108½			51
30	E	4140*	HC	Al	126	1.37x4.94	6	3140	12	237+	4140	Y	3.00x2.43	7	3.25x2.09	3.25x2.09	acdefgr	Zen(3)	2½	3650*	45	47½	88			52
(h)	E	4140*	HC	Al	141	1.62x4.93	4	3140	11½	136	4140		3.24x2.06	7	3.50x2.10	3.50x3.05	abcdefg	Zen	2½	2150*	30½	44	61½	2,1,½,0		53
(h)	E	4140*	HC	Al	145	1.62x4.93	4	3140	11½	136	4140		3.24x2.06	7	3.50x2.10	3.50x3.05	abcdefg	Zen	2½	2150*	30½	44	61½	2,1,½,0		54
45	E	4140*	Ch	Al	89	1.50x4.44	3	3135	9	93	4140	Y	3.00x2.09	7	3.24x1.67	2.48x2.38	bcdefg	Op	1½	1130*	26½	38½	49½	2		55
45	E	4140*	Ch	Al	89	1.50x4.44	3	3135	9	93	4140	Y	3.00x2.09	7	3.24x1.67	2.48x2.38	bcdefg	Op	1½	1130*	26½	38½	49½	2		56
45	E	4140*	Ch	Al	89	1.50x4.44	3	3135	9	93	4140	Y	3.00x2.09	7	3.24x1.67	2.48x2.38	bcdefg	Op	1½	1210	54	23	48½	2		57
45	E	4140*	Ch	Al	89	1.50x4.44	3	3135	9	93	4140	Y	3.00x2.09	7	3.24x1.67	2.48x2.38	bcdefg	Op	1½	1210	54	23	48½	2		58
30	Op	St	HG	CI	25	.687x2.50	3	3140	8½	21	1045	Y	1.90x1.00	2	2.00x1.25	2.00x1.37	acg	Op	½	131	16½	16½	18½	5,6		59
30	Op	Ext	HG	Al	29	.750x2.56	3	3140	6½	21	1045	Y	1.75x1.12	2	2.00x1.56	2.00x1.62	acg	Op	½	276	17½	18½	29½	4,5		60
30	Op	Ext	HG	Al	29.5	.750x2.81	3	3140	6½	21	1045	Y	1.75x1.12	2	2.00x1.56	2.00x1.62	acg	Op	½	276	17½	18½	29½	4,5		61
30	Op	Ext	HG	CI	19	.687x2.20	3	3140	5½	18	4140	N	1.90x1.00	3	2.00x1.31	2.00x1.37	acg	Op	Op	178	16½	16½	23½	5,6		62
30	Op	Ext	HG	AC	21	.687x2.33	3	3140	5½	18	4140	N	1.90x1.00	3	2.00x1.31	2.00x1.37	acg	Op	Op	178	16½	16½	23½	5,6		63
30	Op	Ext	HG	AC	28	.750x2.56	3	3140	6½	21	CS‡	Op	1.75x1.12	3	2.00x1.56	2.00x1.62	acg	Op	Op	285	17½	19½	29½	4,5		64
30	Op	Ext	HG	AC	29.5	.750x2.81	3	3140	6½	21	CS‡	Op	1.75x1.12	3	2.00x1.56	2.00x1.62	acg	Op	Op	293	17½	19½	29½	4,5		65
30	Op	Ext	HG	Al	29.5	.75x2.81	3	3140	6½	21	4140	N	1.75x1.12	3	2.00x1.56	2.00x1.62	acdg	Op	Op	293	17½	19½	29½	4,5		66
45	Op	Ext	HG	Al	31	1.00x2.90	4	3140	8	37	1046‡	Y	2.00x1.50	5	2.50x1.31	2.50x2.12	acg	Op	1¼	470	20½	24½	31	3,4,5		67
45	Op	Ext	HG	Al	37.5	1.00x3.25	4	3140	8	37	1046‡	Y	2.00x1.50	5	2.50x1.31	2.50x2.12	acg	Op	1¼	470	20½	24½	31	3,4,5		68
45	Op	Ext	HG	Al	40.5	1.00x3.50	4	3140	8	37	1046‡	Y	2.00x1.50	5	2.50x1.31	2.50x2.12	acg	Op	1¼	470	20½	24½	31	3,4,5		69
30	Op	Ext	HG	CI	26	.875x2.67	4	1035	7	28	1046‡	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1¼	440	17½	20½	30½	3,4,5		70
30	Op	Ext	HG	Al	24	.875x2.81	4	1035	7	28	1046‡	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1¼	440	17½	20½	30½	3,4,5		71
30	Op	Ext	HG	Al	26	.875x2.92	4	1035	7	28	1046‡	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1¼	440	17½	20½	30½	3,4,5		72
30	Op	Ext	HG	Al	26	.875x2.92	4	1035	7	28	1046‡	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1¼	440	17½	20½	30½	3,4,5		73
30	Op	Ext	HG	Al	26	.875x2.92	4	1035	7	28	1046‡	Y	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1¼	440	17½	20½	30½	3,4,5		74
45	Op	Ext	HG	Al	31	1.00x2.92	4	3140	8	37	1046‡	Y	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1¼	480	18½	24½	29	3,4,5		75
45	Op	Ext	HG	Al	35.5	1.00x3.17	4	3140	8	37	1046‡	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1¼	495	18½	24½	29	3,4,5		76
45	Op	Ext	HG	Al	37.5	1.00x3.29	4	3140	8	37	1046‡	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1¼	495	18½	24½	29	3,4,5		77
45	Op	Ext	HG	Al	40.5	1.00x3.51	4	3140	8	37	1046‡	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1¼	495	18½	24½	29	3,4,5		78
30	Op	Ext	HG	Al	44.5	1.12x3.44	4	3140	8	39.2	1046‡	Y	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1¼	530	18½	24½	29	3,4,5		79
45	Op	Ext	HG	Al	50	1.12x3.70	4	1035	9½	80	1046‡	Y	2.25x1.56	7	2.62x1.75	2.62x2.75	acg	Op	1½	830	22½	28½	42½	2,3		80
45	Op	Ext	HG	Al	44	1.12x3.96	4	3140	8½	80	1046‡	Y	2.25x1.50	7	2.62x1.75	2.62x2.75	acg	Op	1½	811	28½	28½	42½	2,3		81
30	Op	Ext	HG	Al	58	1.31x3.62	4	3140	8½	80	1046‡	Y	2.25x1.56	7	2.62x1.75	2.62x2.75	acg	Op	1½	825	28½	28½	42½	2,3		82
(h)	Op	Ext	HG	Al	63.5	1.31x3.62	4	3140	9½	76.5	1046‡	Y	2.62x2.00	7	3.00x1.93	3.00x2.93	acg	Op	Op	1220	27½	34½	47½	2		83
(h)	Op	Ext	HG	Al	65	1.31x3.62	4	3140	9½	76.5	1046‡	Y	2.62x2.00	7	3.00x1.93	3.00x2.93	acg	Op	Op	1220	27½	34½	47½	2		84
45	Op	Ext	HG	Al	60	1.25x3.96	5	3140	9½	78	1046‡	Op	2.62x2.00	7	2.95x1.93	3.00x2.93	acg	Op	1½	1060	28½	32½	46½	2,3		85

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	VALVES									
				With Bare Engine	With Standard Accessories						Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.)		Min. Port Diameter (In.)		Lift (In.)		Stem Diameter (In.)	
													Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
	Hercules—Cont'd																			
1	RXC	T,B,Tr,M,Ind	6-4½x5½	143-2400	121-2400	529.0	6.30	372-1100 (BE)	N	In	L	2112N	2.00	2.00	1.75	1.75	.380	.380	.373	.373
2	RXLC	T,B,Tr,M,Ind	6-4½x5½	146-2400	124-2400	529.0	6.30	406-1100 (BE)	N	In	L	2112N	2.00	2.00	1.81	1.75	.380	.380	.373	.373
3	RXLD	T,B,Tr,M,Ind	6-4½x5½	154-2400	131-2400	560.0	6.30	430-1100 (BE)	N	In	L	2112N	2.00	2.00	1.81	1.75	.380	.380	.373	.373
4	RXLDH	T,B,Tr,M,Ind	6-4½x5½	181-2600	153-2600	560.0	6.90	443-1400 (BE)	N	In	L	2112N	2.06	2.00	1.87	1.75	.442	.442	.435	.435
5	HXB	T,B,Tr,M,Ind	6-5x6	160-2000	136-2000	707.0	6.20	502- 900 (BE)	N	Se	L	2112	2.43	2.31	2.12	2.00	.468	.468	.496	.496
6	HXC	T,B,Tr,M,Ind	6-5x6	175-2000	146-2000	779.0	6.20	555- 900 (BE)	N	Se	L	2112	2.44	2.31	2.12	2.00	.468	.468	.496	.496
7	HXD	T,B,Tr,M,Ind	6-5½x6	202-2000	172-2000	855.0	6.20	645- 903 (BE)	N	Se	L	2112	2.44	2.31	2.12	2.00	.468	.468	.496	.496
8	HXE	T,B,Tr,M,Ind	6-5½x6	227-2000	193-2000	935.0	6.20	750- 900 (BE)	N	Se	L	2112	2.44	2.31	2.18	2.00	.468	.468	.496	.496
9	HXLC	T,B,Tr,M,Ind	6-5½x6	240-2400	212-2400	779.0	6.40	600-1400 (BE)	N	Se	L	2112	2.44	2.31	2.25	2.00	.500	.500	.496	.496
10	HXLD	T,B,Tr,M,Ind	6-5½x6	252-2400	225-2400	855.0	6.40	696-1400 (BE)	N	Se	L	2112	2.44	2.31	2.25	2.00	.500	.500	.496	.496
11	HXLE	T,B,Tr,M,Ind	6-5½x6	272-2400	245-2400	935.0	6.40	760-1400 (BE)	N	Se	L	2112	2.44	2.31	2.25	2.00	.500	.500	.496	.496
12	International U-1	Tr,Ind	4-25/16x25/16	17.0-2800	16.5-2500	89.5	7.00	38.5-1700 (EA)	N	In	L	CNS	1.10	.91	.98	.79	.222	.222	.310	.310
13	U-2A	Tr,Ind	4-3x4	25.0-1800	24-1800	113.1	6.90	82-1200 (EA)	W	In	I	CNS	1.34	1.16	1.19	1.06	.261	.261	.341	.341
14	U-164	Tr,Ind	4-3½x4½	38.5-1800	36.5-1800	163.0	6.15	124-1000 (EA)	D	In	I	CNS	1.50	1.38	1.34	1.21	.380	.380	.341	.341
15	U-264	Tr,Ind	4-4x5½	53-1600	50-1600	263.2	5.90	187- 900 (EA)	D	In	I	CNS	1.81	1.66	1.66	1.44	.438	.438	.372	.372
16	U-9	Tr,Ind	4-4.4x5½	66.3-1500	66-1500	334.6	6.40	229- 950 (EA)	D	In	I	CNS	2.10	1.91	1.87	1.66	.469	.469	.402	.402
17	U-220	Ind	6-3 7/16x3 11/16	84-2400	82-2400	220.5	7.00	1525-1200 (EA)	N	In	I	CNS	1.66	1.52	1.25	1.19	.397	.397	.372	.370
18	U-240	Ind	6-3½x4	88.5-2400	84-2400	240.3	7.00	171-1200 (EA)	N	In	I	CNS	1.66	1.52	1.25	1.19	.398	.398	.372	.370
19	U-282	Ind	6-3 11/16x4 1/16	79.1-2400	75.5-2400	282.5	6.50	204-1225 (EA)	N	In	I	SII	1.81	1.53	1.50	1.31	.406	.406	.372	.372
20	U-372	Ind	6-4x4½	98.5-2200	91.5-2200	372.1	6.50	264-1200 (EA)	D	In	I	SII*	2.25	1.55	2.00	1.38	.449	.449	.434	.434
21	U-408	Ind	6-4½x4½	104-2200	98-2200	405.9	6.50	281-1200 (EA)	D	In	I	SII*	2.25	1.55	2.00	1.38	.449	.449	.434	.434
22	U-450	Ind	6-4½x5	118.5-2200	115-2200	450.9	6.50	327-1200 (EA)	D	In	I	SII*	2.25	1.55	2.00	1.38	.449	.449	.434	.434
23	U-1091	Ind	6-5½x7	214-1600	208-1600	1090.0	7.50	830- 800 (EA)	D	In	I	CNS	2.53	2.09	2.31	1.88	.625	.625	.496	.494
24	Kermath Cub	M	4-2½x3		25-3400	53.0	6.00	40-1700 (EA)	N	In	L	SII	1.25	1.12	1.12	.675	.250	.250	.310	.310
25	"Jeep	M	4-3 1/16x4½		40-2700	134.0	6.46	106-2200 (EA)	N	In	L		1.53	1.46	1.34	1.23	.359	.359	.373	.373
26	"Jeep	M	4-3 1/16x4½		61-3600	134.0	6.46	106-2200 (EA)	N	In	L		1.53	1.46	1.34	1.29	.359	.359	.373	.373
27	"Prince	M	6-3 1/16x4½		100-3600	221.0	6.50		N	In	L	SII	1.87	1.67	1.81	1.61	.281	.281	.310	.310
28	"Rover	M	6-4x4½		130-3000	320.0	6.90	235-2000 (EA)	N	In	L	CNS	1.94	1.62	1.62	1.37	.376	.376	.373	.373
29	"Mate	M	6-4 1/16x4½		160-3000	404.0	6.50		N	In	L	CNS	2.06	1.87	1.81	1.62	.900	.900	.373	.373
30	"Terrier	M,Ind	6-3x3½		225-2400	678.0	5.70	498-1000 (EA)	N	Se	L	CNS	2.32	2.37	2.37	2.00	.437	.437	.437	.437
31	"Raider Special 6	M,Ind	6-5½x6		260-2400	776.0	6.00	620-2200 (EA)	N	Se	I	Tun	1.93	1.93	1.76	1.76	.375	.375	.437	.437
32	"Raider Special 12	M,Ind	12-5½x6		560-2400	1552.0	6.70	1070-1400 (EA)	N	Se	L	CNS	1.93	1.93	1.76	1.76	.375	.375	.437	.437
33	Sea Prince Special	M	6-3 1/16x4½		105-3600	236.0	6.90	190-1900 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.340	.340	.310	.310
34	Sea Hover Special	M	6-4x4½		145-3200	336.0	6.90	263-2000 (EA)	N	In	L	Aus	1.83	1.60	1.72	1.50	.356	.356	.373	.373
35	Lathrop Standard	M	3-5½x6½		34- 800	453.2		237- 700 (EA)	N	Se	Th	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
36	LH-4	M	4-3½x4		45-2500	133.0		92-2000 (EA)	N	In		CNS			1.25	1.22	.312	.312	.312	.312
37	LH-Master	M	4-4x4½		70-2500	214.0			N	In	L	CNS	1.62	1.75	1.50	1.37	.375	.375	.375	.375
38	Standard	M	4-5½x6½		48- 800	617.7		342- 600 (EA)	N	Se	Th	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
39	Engineers	M	4-6x7		76-1000	791.6		461- 700 (EA)	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
40	LH-6	M	6-3½x4½		64-2200	282.0		173- 550 (EA)	N	In	L	CNS			1.50	1.37	.312	.312	.375	.375
41	LH-6 DeLuxe	M	6-4x4½		120-3000	320.0		226-2500 (EA)	N	In	L	CNS	1.75	1.62	1.50	1.37	.356	.356	.375	.375
42	LH-Super	M	6-4x4½		132-3200	339.0		132-3200 (EA)	N	In	L	CNS	1.75	1.62	1.50	1.37	.375	.375	.375	.375
43	125 Mystic	M	6-4½x5½		130-1800	594.7		379- 900 (EA)	N	Se	L	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
44	175 Mystic	M	6-5½x6½		175-1535	1012.8		640-1100 (EA)	N	Se	L	CNS	2.68	2.68	2.31	2.31	.437	.437	.500	.500
45	Engineers	M	6-6x7		118-1000	1187.5		680- 925 (EA)	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
46	LH-Atom		6-3½x4½		90-3000	282.0														
47	LH-Atom Special		6-3½x4½		100-3000	282.0														
48	LH-Super Special		6-4x4½		145-3000	339.0														
49	Le Roi A288	Ind	1-7½x7	26.3- 720	288.9	5.80	195- 900 (EA)	W	In	I	SII	3.34	2.81	2.06	2.62	.530	.530	.622	.621
50	A114	Ind	1-5½x5½	16.5-1400	113.6	6.67	88- 800 (EA)	W	In	I	CNS	1.94	1.94			.490	.490	.435	.435
51	F1500	Ind	6-5½x7	215-1200	1503.0	4.50	1035- 650 (EA)	N	Se	I	SII	2.81	2.81	2.12	2.00	.625	.625	.624	.624
52	H540	Tr,Ind	V8-4½x4½	143-1800	540.0	5.60	421- 900 (EA)	W	In	I	2112	1.94	1.90	1.62	1.37	.410	.410	.373	.372
53	TH540	T,B	V8-4½x4½	205-3000	540.0	6.70	460-1800 (EA)	W	In	I	2112N	1.94	1.90	1.62	1.37	.410	.410	.373	.372
54	H2000	Ind	V8-5½x7	290-1200	2004.0	4.50	1375- 650 (EA)	N	Se	I	SII	2.81	2.81	2.12	2.00	.625	.625	.624	.624
55	L3000	Ind	V12-5½x7	435-1200	3006.0	4.50	2070- 650 (EA)	N	Se	I	SII	2.81	2.81	2.12	2.00	.625	.625	.624	.624
56	L3480	Ind	V12-7½x7	580-1350	3480.0	4.57	2530- 900 (EA)	W	In	I	SII	3.34	2.81	2.75	2.62	.625	.625	.622	.621
57	H944	T,B,Ind	6-5½x4½	300-2800	944.0	6.50	710-1800 (BE)	W	Se	I	2112N	2.29	1.90	2.13	1.81	.410	.410	.434	.434
58	L4800	Ind	12-7½x7½	700-1200	4018.0	7.00	3305- 900 (BE)	W	In	I	SII	3.37	2.94	2.75	2.69	.625	.625	.623	.622
59	TH944	T,B	6-5½x4½	290-2800	944.0	6.70	730-1800 (BE)	W	In	I	NS(x)	2.29	1.79	2.13	1.63	.460	.460	.436	.434
60	Mack Magnadyne EN291	T	6-3½x4½	107-2800	198-2800	290.0	6.90	-1400 (EA)	N	In	L	2112*	2.01	1.53	1.75	1.38	.438	.438	.435	.433
61	Magnadyne EN331	T	6-4x4½	122-2800	114-2800	330.0	6.90	236-1400 (EA)	N	In	L	2112*	2.01	1.53	1.75	1.38	.438	.438	.435	.433
62	Magnadyne EN401	T	6-4½x5½	156-2800	150-2800	401.0	7.29	330-1400 (BE)	N	In	L	xBE*	2.06	1.63	1.75	1.44	.438	.438	.438	.438
63	Thermodyne EN464	T	6-4½x5	170-2800	152-2800	464.0	6.71	370-1800 (BE)	N	In	I	xBE*	2.10	1.54	1.90	1.38	.471	.471	.438	.438
64	Thermodyne EN707B	T	6-5x6	186-2800	179-2800	707.0	6.42	544-1100 (EA)	N	In	I	xBE*	2.27	1.90	2.00	1.75	.500	.500	.496	.496
65	Minneapolis-Moline 165-4	Ind,Tr	4-3½x4	31-1500	29-1500	165.1	6.20	114-1250 (BE)	N	Se	Hh		1.46	1.46	1.25	1.25	.386	.386	.341	.341
66	206A-4	Ind,Tr	4-3½x5	40-1500	38-1500	206.5	6.10	150-1100 (BE)	N	Se	Hh		1.46	1.46	1.25	1.25	.355	.356	.341	.341
67	283-4	Ind,Tr	4-4½x5	61-1300	61-1300	283.7	6.30	236-1000 (BE)	N	Se	I		1.72	1.59	1.50	1.37	.490	.490	.434	.434
68	403-4	Ind,Tr	4-4½x6	75-1300	69-1300	403.2	5.70	335- 900 (BE)	N	Se	I		1.72	1.59	1.50	1.37	.490	.490	.434	.434
69	425-6	Ind	6-4½x5	83-1400	78-1400	425.5	6.30	335-1000 (BE)	N	Se	I		1.72	1.59	1.50	1.37	.490	.490	.434	.434
70	605-6	Ind	6-4½x6	98-1200	94-1200	605.0	5.70	480- 800 (BE)	N	Se	I		1.72	1.59	1.50	1.37	.490	.490	.434	.433
71	1210-12A	Ind	12-4½x6	200-1200	190-1200	1210.0	5.70	1760- 800 (BE)	N	Se	I		1.72	1.59	1.50	1.37	.490	.490	.434	.434
72	V206-4	Tr	4-3½x5	38-1500	37-1500	206.5	6.10	148-1100 (BE)	N	Se	Hh		1.46	1.46	1.25	1.25	.356	.356	.341	.341
73	800-6	Ind	6-5½x6	134-1200	126-1200		7.00	620- 800 (BE)	N	Se	I	2112*	1.72	1.59	1.50	1.37	.490	.490	.434	.434
74	1600-12	Ind	12-5½x6	250-1200			7.00	1060- 800 (BE)	N		I	2112*	1.72	1.59	1.50	1.37	.490	.490	.434	.434
75	Norberg Bluefin X230	M	6-3 1/16x4½		98-3200	230.0	6.80	154-1600	N	In	L	2112	1.61	1.39	1.50	1.25	.311	.311	.310	.310
76	Arrow 230	M	6-3 1/16x4½		98-3200	230.0	6.90	178-2000	N	In	L	2112	1.61	1.39	1.50	1.25	.311	.311	.310	.310
77	Marlin 320	M	6-4x4½		110-2500	320.0	6.90	243-1600	N	In	L	2112	1.75	1.62	1.50	1.37	.356	.356	.372	.372
78	Knight 360	M	6-4x4½		125-3200	340.0	7.20	263-1400	N	In	L	Aus	1.83	1.60	1.72	1.50	.356	.356	.372	.372
79	Bullet 240	M	6-3 1/16x4½		110-3400	230.7	6.80	193-1600	N	In	L	Aus	1.61	1.39	1.50	1.25	.340	.340	.310	.310
80	Tarpon 320	M	6-4x4½		138-3000	320.4	7.20	239-2400 (EA)	N	In	L	2112	1.83	1.60	1.72	1.50	.356	.356	.372	.372

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

GASOLINE ENGINES—*continued*

VALVES				PISTONS				CONNECTING RODS				CRANKSHAFT							CARBURETOR			OVERALL DIMENSIONS (In.)				
Seats															MAIN BEARINGS											
Angle (Deg.)	Inserts Used?	Insert Material (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Crank-Pin Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure in—	Make	Size	Engine Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. Nos.)	Line Number
45	Op	Ent	HO	Al	63	1.25x4.07	5	3140	9½	78	1040‡	Op	2.62x2.00	7	3.00x1.93	3.00x2.93	sog	Op	1½	1010	26½	32½	46½	2,3	1
45	Op	Ent	HO	Al	65	1.25x4.07	5	E-4342	9½	97	CS‡	Op	3.00x2.00	7	3.50x1.93	3.50x2.93	sog	Op	1½	1196	28½	38½	46½	1,2	2
(h)	Op	Ent	HO	Al	66	1.25x4.29	4	E-4342	9½	97	CS‡	Op	3.00x2.00	7	3.50x1.93	3.50x2.93	sog	Op	1½	1196	28½	38½	46½	1,2	3
(h)	Op	Ent	HG	Al	66	1.50x4.11	4	E-4342	9½	97	CS‡	Y	3.00x2.00	7	3.50x1.93	3.50x2.93	sog	Op	2	1320	28½	38½	46½	1,2	4
30	Op	Ent	HG	Al	98	1.50x4.43	4	3140	12	166	1046‡	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	sog	Op	2	1810	29½	40½	55½	00,0,1	5
30	Op	Ent	HG	Al	108	1.50x4.56	4	3140	12	166	1046‡	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	sog	Op	2	1810	29½	40½	55½	00,0,1	6
30	Op	Ent	HG	Al	119	1.50x4.81	4	3140	12	166	1046‡	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	sog	Op	2½	1830	29½	40½	55½	00,0,1	7
30	Op	Ent	HG	Al	126	1.50x5.06	4	3140	12	166	1046‡	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	sog	Op	2½	1830	29½	40½	55½	00,0,1	8
30	Op	Ent	HG	Alm	136	1.75x4.56	4	EFS	12	187	CS	....	3.31x2.25	7	3.75x2.37	3.75x3.50	sog	Op	2	2360	29½	40½	55½	00,0,1	9
30	Op	Ent	HG	Alm	150	1.75x4.75	4	EFS	12	187	CS	....	3.31x2.25	7	3.75x2.37	3.75x3.50	sog	Op	2½	2370	29½	40½	55½	00,0,1	10
30	Op	Ent	HG	Alm	189	1.75x5.00	4	EFS	12	187	CS	....	3.31x2.25	7	3.75x2.37	3.75x3.50	sog	Op	2½	2380	29½	40½	55½	00,0,1	11
45	N	....	HG	Cl	26	.688x2.19	3	1035	5	15.4	1046‡	Y	1.90x.76	3	1.62x1.06	1.62x1.06	scdg	Own	¾	270*	16½	23¼	26½	5	12
45	N	....	HG	Cl	35	.919x2.50	4	1040	7¼	33	1046‡	N	1.75x1.19	3	2.12x1.37	2.12x1.84	scdfg	Zen	1¼	475*	18½	33½	30½	4	13
45	E	MSA	HG	Al	36	1.11x2.77	4	1040	8	57	1046‡	N	2.25x1.23	3	2.50x1.49	2.50x1.49	scdfg	Own	1¼	660*	18½	34½	53½	4	14
45	E	MSA	HG	Al	53	1.31x3.23	4	1040	10	93	1046‡	N	2.56x1.72	3	2.81x1.56	2.81x1.56	scdfg	Own	1½	1010*	20½	39½	37	2	15
45	E	MSA	HG	Al	111	1.50x3.70	5	1040	11	124	1046‡	N	3.00x1.97	3	3.25x1.87	3.25x1.87	abcdfg	Own	1½	1230*	23½	42½	40½	1	16
30	E	DC	HG	Al	28°°	.875x2.33	3	1037	6½	38	1046	Y	2.38x1.16	4	2.75x1.69	2.75x2.17	abcdfg	Zen	1¼	610*	21½	33½	41½	3	17
30	E	Sil	HG	Al	28°°	.875x2.90	4	1037	6½	36	1046	Y	2.38x1.16	4	2.75x1.69	2.75x2.17	abcdfg	Zen	1¼	610*	21½	33½	41½	3	18
45	E	St	HG	Al	23°°	.922x3.36	4	9632	9½	43	1046	Y	2.13x1.41	4	2.70x1.40	2.70x1.62	abcdfg	Zen	1¼	945*	22½	36½	41½	3	19
44	E	St	HG	Al	47.5°°	1.11x3.86	4	9632	9	61	1046	Y	2.75x1.38	7	3.25x1.86	3.25x2.37	abcdfg	Zen	1¼	1240*	24½	37½	47½	1	20
44	E	St	HG	Al	45°°	1.11x3.86	4	9632	9	61	1046	Y	2.75x1.38	7	3.25x1.81	3.25x2.37	abcdfg	Zen	1¼	1240*	25½	37½	47½	1	21
44	E	St	HG	Al	42.5°°	1.11x3.86	4	9632	9	61	1046	Y	2.75x1.38	7	3.25x1.81	3.25x2.37	abcdfg	Zen	1¼	1250*	25½	37½	47½	1	22
45	N	....	HG	Al	88.2°°	1.69x5.00	5	1040	13½	253.9	1046	Y	3.53x2.38	7	4.13x1.75	4.13x1.75	abcdfg	Ena	2½	3880*	32	68½	70½	0	23
30	N	....	HG	Cl	19	.687x2.16	3	CS	8½	15	CS	N	1.69x1.00	3	2.00x1.37	2.00x1.31	scdr	Zen	¾	300*	18½	17½	29½	.....	24
45	N	....	HG	Al	12	.812x2.78	3	MS	9½	34	1040	Y	1.93x1.31	3	2.33x1.75	2.33x1.92	scdr	Zen	1¼	495*	21½	24½	36	.....	25
45	N	....	HG	Al	12	.812x2.78	3	MS	9½	34	1040	Y	1.93x1.31	3	2.33x1.75	2.33x1.92	scdr	Zen	1¼	495*	21½	24½	36	.....	26
30	N	....	HG	Al	24	.875x2.92	4	CS	7	26	CS	N	2.00x1.25	7	2.50x1.93	2.50x1.87	scdr	Zen	1¼	820*	24	24½	42½	.....	27
30	N	....	HG	Al	40	1.00x3.51	4	CS	8	38	CS	N	2.00x1.50	7	2.50x2.12	2.50x1.37	scdr	Zen	1¼	925*	21½	27½	52½	.....	28
45	N	....	HG	Al	50	1.12x3.82	4	CS	9	51	CS	Y	2.25x1.50	7	2.63x2.75	2.63x1.75	scdr	Zen	2	1125*	24½	29½	58½	.....	29
45	N	....	HG	Alo	82	1.25x4.50	4	DFS	11	80	CS	Y	2.25x2.23	7	2.50x3.91	2.50x2.62	abcdgr	Zen(2)	1¼	1570*	26½	34½	69½	.....	30
45	N	....	HG	Al	82	1.25x4.50	4	CNS	11	184	CNS	Y	2.75x2.25	7	3.00x3.94	3.00x2.26	scdefg	Zen(2)	2	2100*	27	40½	77	4,2,0	31
45	N	....	SS	Alo	82	1.25x4.50	4	CNS	11	184	CNS	Y	2.75x2.25	7	3.00x3.94	3.00x2.26	abcdgr	Zen	2	2700*	42½	43½	75½	.....	32
30	N	....	HG	Al	28	.875x2.92	4	1035	7	26	1046	....	2.00x1.25	7	2.50x1.31	2.50x1.93	scdeg	Zen	1½	630	24	24	40	.....	33
30	N	....	HG	Al	44	1.12x3.44	4	3140	8	38	1046	....	2.00x1.50	7	2.50x1.31	2.50x2.12	scdeg	Zen	2	930	21½	27½	52½	.....	34
45	....	....	HG	Cl	179	1.37x5.06	4	AS	12½	96	CNS	N	1.87x2.75	4	2.25x5.00	2.25x4.00	sog	Zen	1½	1490	25	22½	60½	.....	35
30	....	....	HG	Al	....	.750x2.81	3	AS	8½	....	CNS	N	1.87x2.75	4	....	....	sog	Zen	1	440	17½	14½	40½	.....	36
30	N	....	HG	Al	40	1.00x3.50	4	AS	8	36	CNS	....	2.00x1.50	6	2.50x1.31	2.50x2.12	scdg	Zen	1½	790	20	26½	36½	.....	37
45	....	....	HG	Cl	179	1.37x5.00	4	AS	12½	96	CNS	N	1.87x2.75	6	2.25x5.00	2.25x4.00	sog	Zen	1½	1750	28½	22½	68½	.....	38
45	E	Spec	HG	Cl	204	1.50x5.50	4	AS	13½	172	CNS	N	2.75x2.75	6	3.00x3.50	3.00x3.50	scdg	Zen	1½	2290	29½	24	76	.....	39
30	....	....	HG	Al	....	1.00x3.50	3	AS	8	....	CNS	N	2.75x2.75	6	3.00x3.50	3.00x3.50	scdg	Zen	1½	830	21½	17	51	.....	40
30	E	Spec	HG	Al	40	1.00x3.50	4	DFS	8	36	Spec	N	2.00x1.50	7	2.50x1.31	2.50x2.12	scdg	Zen	1½	820	21½	23	51	.....	41
45	....	....	HG	Al	98	1.37x3.87	4	Dur	8	38	CNS	....	2.00x1.50	7	2.50x1.31	2.50x2.12	abcdeg	Zen	1½	840	21½	25	47	.....	42
45	....	....	HG	Cl	104	1.37x4.12	4	Dur	12½	68	CNS	N	2.25x2.37	7	2.75x3.25	2.75x2.12	scdg	Hal	....	1700	24½	27½	66	.....	43
45	....	....	HG	Cl	178	1.50x5.12	4	AS	13½	164	CNS	N	2.75x2.75	7	3.00x3.37	3.00x3.25	scdg	Hal	....	2480	24½	29½	76½	.....	44
45	E	Spec	HG	Cl	204	1.50x	4	AS	13½	172	CNS	N	2.75x2.75	7	3.00x3.50	3.00x3.50	abcdg	Zen(2)	1½	2950	31½	24	92	.....	45
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	46
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	47
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	48
45	E	T-12	HG	Al	256	2.25x6.12	4	1040	15	336	1046	Y	5.00x2.15	2	5.00x2.15	5.00x2.13	abcdf	Own	1½	2270	37½	49	42½	2	49
45	Be	Ste	HG	Al	91.4	1.50x4.56	4	1040	9½	77	Pro	....	3.25x1.41	2	3.00x2.00	3.00x2.00	acdefg	Ena	1½	1530	44	48	40½	4	50
45	E	T-12	HG	Al	250	1.75x6.12	4	1045	14	236	4140	N	3.56x3.75	4	3.93x5.25	3.93x5.25	acdf	Zen(2)	1½	3750	43	58	60	00,0	51
45	Be	T-12	HG	Al	62	1.25x3.93	4	1040	8½	52	4140	Y	2.75x1.25	5	3.25x1.12	3.25x1.12	acdf	Zen	1½	1300	30½	39½	37	1,2	52
45	Be	T-12	HG	Al	62	1.25x3.93	4	1040	8½	52	4140	Y	2.75x1.25	5	3.25x1.12	3.25x1.12	acdf	Zen	2	1350	30½	43	44½	2	53
45	E	T-12	HG	Al	200	1.75x6.12	4	3140	15	**	1045	Y	3.50x3.75	3	3.93x5.25	3.93x5.25	acdf	Zen(2)	2	3800	45	66	66	00	54
45	E	T-12	HG	Al	200	1.75x6.12	4	3140	15	**	4140	N	3.50x3.75	4	3.93x5.25	3.93x5.25	acdf	Zen(4)	1½	5300	45	66	79	00	55
45	E	T-12	HG	Al	256	2.25x6.37	4	1040	15	336	4140	Y	5.00x2.18	8	5.50x2.37	5.50x4.31	abcdf	Zen(4)	2	10360	49	75	99½	00	56
45	E	....	HG	Alo	97.5	1.50x9.56	4	1040	9½	72.9	DI	....	3.25x3.12	5	3.75x1.38	3.75x1.88	acdef	Zen	1½	....	33½	40	48½	1	57
45	Be	2140*	HG	Al	....	2.25x6.36	4	....	15	....	Sto	....	5.00x4.75	6	5.50x2.36	5.50x4.31	acdef	Ena(2)	3½	11900	49	74½	130½	00	58
45	E	St	HG	Alo	91.3	1.50x4.56	4	1040	9½	70.4	1046	....	3.25x3.13	5	3.75x1.37	3.75x1.37	acdef	Zen	1½	1900*	33½	40	48½	1	59
(h)	E	Nif"(x	HG	Al	47	1.12x3.10	5	4130	10½	84	1046‡	Y	2.38x1.34	7	3.00x1.41	3.00x2.12	acdeg	Zen	1½	920	28½	36½	44½	3	60
(h)	E	Nif"	HG	Al	52	1.12x3.45	5	4130	10½	84	1046‡	Y	2.38x1.34	7	3.00x1.41	3.00x2.12	acdefg	Zen	1½	920	28½	36½	44½	3	61
(h)	E	Nif"(x	HG	Al	51	1.12x3.45	5	4130	10½	84	1046‡	Y	2.38x1.34	7	3.00x1.41	3.50x2.12	abcdf	Zen	1½	1070	28½	36½	45½	3	62
(h)	E	Nif"(x	HG	Al	72	1.31x3.56	4	4130	10½	88.8	1046‡	Y	2.75x1.56	7	3.50x1.69	3.50x2.22	abcdf	Zen	2	1522	26	43½	46½	2	63
(h)	E	Nif"(x	HG	Alt	91	1.43x4.43	5	4130	11½	116	1050‡	Y	3.00x1.91	7	4.00x1.57	4.00x2.88	acdefg	Zen	1½	1902	28.06	51.75	53½	1	64
45	E	St	HG	Cl	90	1.00x3.00	4	DFS	8	51	DFS	N	2.62x1.28	2	60RM02	3.00x2.18	acegt	MaS	1	u900	23½	32½	37½	4	65
45	E	St	HG	Cl	94	1.00x3.00	4	DFS	8½	45	DFS	N	2.62x1.28	3	60RM02	3.00x2.18	acegt	MaS	1	u670	23½	32½	37½	4	66
45	E	St	HG	Cl	85	1.28x3.87	4	DFS	10	90	DFS	N	2.57x2.22	3	2.91x2.16	2.91x3.50	acdefgt	MaS	1½	u1190	25½	41½	45½	2	67
45	E	St	HG	Al	88	1.28x4.12	4	DFS	11½	98	DFS	N	2.75x2.00	4	2.91x2.16	2.91x3.50	acdefgt	MaS	1½	u1250	25½	47½	45½	2	68
45	E	St	HG	Cl	85	1.28x3.87	4	DFS	10	90	DFS	Y	2.57x2.22	3	2.91x2.16	2.91x3.50	acdefgt	Zen	1½	u1000	25½	46½	45½	2	69
45	E	St	HG	Cl	108	1.28x4.25	4	DFS	11½	91	DFS	Y	2.75x2.00	4	2.91x2.16	2.91x3.50	acdefgt	Zen	1½	u1900	28½	46½	58½	1	70
45	E	St	HG	Cl	108	1.28x4.25	4	DFS	11½	91	DFS	Y	2.75x2.00	4	2.91x2.16	2.91x3.80	acdefgt	Zen	1½	6150	48½	71	111½	.....	71
45	E	St	HG	Cl	94	1.00x3.00	4	DFS	8½	45	DFS	....	2.62x1.28	2	60RM02	SAE 70	acfg	MaS	1	625	23	34	37	.....	72
45	E	St	HG	Al	120	1.78x4.75	4	DFS	11½	133	DFS	....	3.25x2.09	4	3.50x2.00	3.50x3.13	acdefg	Ena	1½	2400	29	53½	58½	1	73
45	E	St	HG	Al	120	1.78x4.75	4	DFS	11½	133	DFS	....	3.25x2.09	4	3.50x2.00	3.50x3.13	acdefg	Ena(2)	1½	....	48½	72½	111½	.....	74
30	N	....	HG	Al	26	.875x2.90	3	1035	7	26	3140‡	N	2.00x1.25	7	2.50x1.31	2.50x1.93	scdr	Zen	1½	720	24½	23½	43½	6	75
30	N	....	HG	Al	26	.875x2.90	3	1035	7	26	3140‡	N	2.00x1.25	7	2.50x1.31	2.50x1.93	scdr	Zen	1½	780	24½	23½	46½	6	76
30	N	....	HG	Al	40.5	1.00x3.50	3	1040	8	37	3140‡	N	2.00x1.50	7	2.50x1.31	2.50x2.12	scdr	Zen	1½	880	24½	25	46½	6	77
30	N	....	HG	Al	44.5	1.12x3.44	3	1035	8	39.2	3140‡	Y	2.00x1.50	7	2.50x1.31	2.50x2.12	abcdr	Zen	2	980	24½	25	47½	6	78
30	N	....	HG	Alt	25	.875x2.90	3	1035	7	26	3140	Y	1.90x1.25	7	2.50x1.31	2.50x1.93	abcdgr	Zen	1½	u750	24½	23½	43½	6	79
30	N	....	HG	Al	40.5	1.00x3.50	3	1040	8	37	3140‡	....	2.00x1.50	7	2.50x1.31	2.50x2.12	acdeg	Zen	1½	860	24½	25	47½	6	80

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	VALVES									
				With Bare Engine	With Standard Accessories						Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.)		Min. Port Diameter (In.)		Lift (In.)		Stem Diameter (In.)	
													Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
1	Oliver Super 99HC	Tr	4-3½x3½		36.5-2000	144.0	7.00	114-1150 (EA)	W	In	I	SII	1.41	1.29	1.25	1.13	.360	.360	.373	.372
2	Super 66HC	Tr	4-3½x3½		36.5-2000	144.0	7.00	114-1150 (EA)	W	In	I	SII	1.41	1.29	1.25	1.13	.360	.360	.373	.372
3	Super 77HC	Tr	6-3½x3½		43-1600	216.0	7.00	152-1100 (EA)	W	In	I	SII	1.41	1.29	1.25	1.13	.313	.281	.373	.372
4	Super 88HC	Tr	6-3⅝x4		58.3-1600	265.0	7.00	203-1000 (EA)	W	In	I	SII	1.53		1.36		.344	.344	.373	.372
5	166HC	Ind	4-3½x3½		31-2000	144.0	6.75	112-800 (EA)	W	In	I	SII	1.31	1.13	1.18	.986	.224	.204	.373	.372
6	177HC	Ind	6-3½x3½		48.5-2000	216.0	6.75	168-800 (EA)	W	In	I	SII	1.31	1.13	1.18	.986	.224	.204	.373	.372
7	188HC	Ind	6-3⅝x4		58-2000	265.0	6.75	196-900 (EA)	W	In	I	SII	1.41	1.28	1.24	1.12	.369	.362	.373	.372
8	Super 99HC	Tr	6-4x4		69-1675	302.0	6.20	235-1100 (EA)	D	In	I	SII	1.84		1.68	1.43	.246	.246	.373	
9	199HC	Ind	6-4x4		73-2000	302.0	6.20	235-1100 (EA)	D	In	I	SII	1.84	1.69	1.68	1.43	.246	.246	.373	.372
10	Palmer BHT	M	1-3½x3½		6-2800	26.0	5.40	6-2800 (EA)	N	So	L	SII	1.34	1.34	1.15	1.15	.281	.281	.310	.310
11	PH4S	M	4-3½x4		48-3000	133.0	7.20	92-2000 (EA)	N	In	L	CNS	1.48	1.38	1.25	1.12	.312	.312	.310	.310
12	PH7S	M	6-3½x4½		90-3000	230.0	7.50	162-1400 (EA)	N	In	L	CNS	1.60	1.39	1.50	1.25	.316	.316	.316	.310
13	PH12S	M	6-4x4½		125-3000	320.0	7.50	240-1400 (EA)	N	In	L	CNS	1.82	1.67	1.65	1.56	.360	.360	.373	.373
14	PH13S	M	6-4x4½		135-3000	339.0	7.50	270-1400 (EA)	N	In	L	Aus	1.83	1.67	1.72	1.56	.356	.356	.373	.373
15	PH15S	M	6-4½x4½		150-3000	404.0	6.50	310-1400 (EA)	N	In	L	Aus	1.87	1.75	1.88	1.62	.388	.388	.373	.373
16	PH & PW-6S	M	4-2⅞x2⅝		29-3000	99.5	6.50	34-2000 (EA)	N	In	L	CNS	1.10	.910	.980	.790	.222	.222	.310	.310
17	PH & PW-24S	M	6-3⅞x4½		115-3200	240.3	6.50	196-1800 (EA)	N	In	I	CNS	1.66	1.52	1.50	1.38	.390	.288	.372	.370
18	Red Wing KK	M	2-3½x4½	11-1100	10-1100	105.0	4.00	54- 800 (EA)	N	So	L	NCI	1.62	1.62	1.43	1.43	.309	.309	.378	.375
19	Meteor CK	M	4-2½x3½	18-2600	16-2600	61.3	5.70	40-1700 (BE)	N	So	L	SII	1.12	.937	1.00	.812	.229	.250	.312	.312
20	Arrowhead, Jr.	M	4-3½x4	38-2600	35-2600	133.0	5.56	92-1200 (EA)	N	In	L	SII	1.34	1.34	1.18	1.18	.281	.281	.312	.312
21	Arrowhead	M	4-3⅝x4½	43-2200	37-2200	186.0	5.50	128- 900 (EA)	N	In	L	SII	1.66	.156	1.37	1.37	.281	.281	.375	.375
22	F	M	4-4½x5	39-1400	36-1400	259.0	4.00	142-1000 (EA)	N	So	L	NCI	1.93	1.93	1.75	1.75	.300	.300	.375	.375
23	Hiawatha Special	M	6-4x4½	66-2800	63-2800	320.0	5.79	210-1000 (BE)	N	In	L	SII	1.68	1.43	1.50	1.25	.375	.375	.375	.375
24	Roo OA-331	T,B	6-4½x4½	148-3200	128-3200	331.0	6.40	260-1200 (EA)	W	In	I	SII(x)	2.01	1.80	1.83	1.62	.420	.420	.435	.434
25	OA-262	T,B	6-3⅞x4½	124-3300	110-3300	262.0	6.56	218-1400 (EA)	W	In	I	SII(x)	2.01	1.80	1.83	1.62	.420	.420	.435	.434
26	OA-255	T,B	6-3⅞x4½	107-3400	93-3400	255.0	6.70	183-1200 (EA)	W	In	I	2112	2.01	1.80	1.83	1.62	.420	.420	.435	.434
27	^OA-331-LPG	T	6-4½x4½	142-3200	130-3200	331.0	6.40	256-1500 (BE)	W	In	I	2112	2.00	1.80	1.83	1.63	.420	.420	.438	.438
28	OH-188	T,B	6-4½x4½	166-3200	148.5-3200	331.0	6.73	296-1400 (BE)	W	In	I	SII	2.00	1.80	1.83	1.63	.420	.440	.438	.438
29	^255-OA-LPG	T	6-3⅞x4½	106-3400	95-3400	255.0	7.16	182-1600 (BE)	W	In	I	(x)2112	2.00	1.80	1.83	1.63	.420	.420	.438	.438
30	^OH-188-LPG	T	6-4½x4½	166-3300	146-3200	331.0	6.20	290-1200 (BE)	W	In	I	SII	2.00	1.79	1.83	1.62	.225	.239	.438	.438
31	OV-195	T	8-3⅞x4½	195-3200	180-3200	390.0	7.30	345-2200 (BE)	W	In	I	SII	2.00	1.80	1.83	1.63	.441	.466	.438	.438
32	OV-220	T	8-4½x4½	220-3200	203-3200	440.0	7.30	405-2000 (BE)	W	In	I	SII	2.00	1.80	1.83	1.63	.441	.466	.438	.438
33	Scripps 26	M	4-3½x4		80-3200	134.0	5.50	100-2900 (EA)	N	In	L	SII	1.48	1.35	1.25	1.12	.250	.250	.310	.310
34	90-97	M	6-3½x4½		95-3000	230.0	7.20	167-1200 (EA)	N	In	L	SII	1.60	1.39	1.50	1.25	.311	.311	.310	.310
35	6-110	M	6-3½x4¾		110-3600	238.0	6.56	196-2400 (EA)	N	In	L	Aus	1.61	1.39	1.50	1.25	.311	.311	.310	.310
36	104-106	M	6-4x4½		110-3000	320.0	5.63	239-1700 (EA)	N	In	L	SII	1.75	1.62	1.50	1.37	.359	.359	.373	.373
37	6-338	M	6-4x4½		140-3200	339.0	6.80	265-2000 (EA)	N	In	L	SII	1.83	1.67	1.72	1.56	.356	.356	.373	.373
38	152-153	M	6-4½x5½		195-3000	447.0	7.16	360-1600 (EA)	N	So	L	SII	2.37	2.25			.375	.375	.437	.437
39	154, 5, 6, 7	M	6-4½x5½		155-3000	447.0	6.20	330-1600 (EA)	N	So	L	SII	2.25	2.25			.375	.375	.437	.437
40	166-168	M	6-4½x5¾		175-2400	549.5	5.75	410-1600 (EA)	N	So	L	SII	2.37	2.28			.406	.375	.437	.437
41	178-179	M	6-4⅝x5⅝		200-2400	611.5	5.75	500-1600 (EA)	N	So	L	SII	2.37	2.28			.405	.375	.437	.437
42	196-198	M	6-5x5½		225-2400	678.0	6.25	540-1800 (EA)	N	So	L	SII	2.56	2.37			.406	.375	.437	.437
43	302-303	M	12-4½x3½		350-2600	894.0	7.16	790-1600 (EA)	N	So	L	SII	2.37	2.25			.375	.375	.437	.437
44	304-305	M	12-4½x3½		295-2400	894.0	6.20	640-1400 (EA)	N	So	L	SII	2.25	2.25			.375	.375	.437	.437
45	306-307	M	12-4½x3½		290-2800	894.0	6.20	660-1800 (EA)	N	So	L	SII	2.25	2.25			.375	.375	.437	.437
46	4-99	M	4-3½x4		80-3200	134.0	6.80	100-2000	N	In	L	SII	1.48	1.35	1.25	1.12	.250	.250	.310	.310
47	Sterling Viking II-TC-6	Tr,Ind	6-5x9		450-1200	2714.0	‡‡	2015- 900 (EA)	W	So	I	SII	2.59	2.59			.586	.556	.557	.557
48	Viking II-TC-6	Tr,Ind	6-5x9		345- 900	2714.0	‡‡	2015- 900 (EA)	W	So	I	SII	2.59	2.59			.586	.586	.557	.557
49	Viking II-T-6	M	6-5x9		606-1200	3619.0	5.20	2685- 900 (EA)	W	So	I	SII	2.39	2.59			.586	.586	.557	.557
50	Viking II-TC-8	Tr,Ind	8-5x9		606-1200	3619.0	‡‡	2685- 900 (EA)	W	So	I	SII	2.39	2.59			.586	.586	.557	.557
51	Viking II-TC-8	Tr,Ind	8-5x9		460- 900	3619.0	‡‡	2685- 900 (EA)	W	So	I	SII	2.39	2.59			.556	.586	.557	.557
52	Petrel-LC-6	Ind	6-5½x6		210-2900	780.0	6.00	550-1700 (EA)	N	So	L	SII	2.25	2.25			.475	.475	.437	.437
53	Petrel-L-6	M	6-5½x6		256-2900	780.0	6.00	550-1700 (EA)	N	So	L	SII	2.25	2.25			.563	.563	.437	.437
54	Studebaker 1E	T	6-3x4⅜	92-3800	83-3800	195.6	7.50	152-1800 (BE)	N	In	L	2112	1.34	1.28	1.19	1.13	.344	.344	.313	.313
55	2E	T	6-3⅛x2⅞	140-4500	111-3600	224.3	7.50	202-2800 (BE)	N	In	I	2112N	1.66	1.53	1.28	1.16	.359	.359	.344	.344
56	3E	T	8-3⅛x3⅛	196-4500	134-4000	259.2	7.50	238-2800 (BE)	N	In	I	2112N	1.66	1.53	1.28	1.16	.359	.359	.344	.344
57	8E	T	8-3⅛x3⅛	170-4500	148-4000	259.2	7.50	250-3000 (BE)	N	In	I	2112N	1.66	1.53	1.28	1.16	.359	.359	.344	.344
58	Universal Blue Jacket-AFTL	M	2-3x3½		12-2200	49.5	5.79		N	In	L	SII	1.68	1.68	1.50	1.50	.290	.290	.375	.375
59	Atomic Four-UJ	M	4-2⅞x3½		25-3500	94.5	6.32		N	In	L	SII	1.21	1.03	1.06	.875	.240	.240	.312	.312
60	Fisherman-WM	M	1-4⅜x4½		5-1200	67.5	5.02		N	In	L	SII	1.67	1.67	1.62	1.62	.250	.250	.375	.375
61	Utility Four-BN	M	4-2⅝x4		25-2500	95.0	4.70		N	In	L	SII	1.25	1.25	1.12	1.12	.234	.234	.312	.312
62	Blue Jacket Flexifour-BFA	M	4-3x3½		45-3800	99.0	6.54		N	In	L	SII	1.68	1.68	1.50	1.50	.312	.312	.375	.375
63	Unimite Four-HF	M	4-3½x4½		65-3400	141.0			N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
64	Blue Jacket Six-AMS	M	6-3x3½		90-3500	148.5	6.54		N	In	L	SII	1.68	1.68	1.50	1.50	.312	.312	.375	.375
65	Superfour-LSG	M	4-3½x4½		90-3000	149.3	5.70		N	So	L	SII	1.56	1.56	1.37	1.37	.312	.312	.375	.375
66	Cruiser Six-HCS	M	6-3½x4½		90-3000	200.0	6.25		N	So	L	SII	1.68	1.68	1.50	1.50	.337	.337	.375	.375
67	Sea Lion Six-LHS	M	6-3½x4½		110-3400	200.0	6.25		N	So	L	SII	1.68	1.68	1.50	1.50	.337	.337	.375	.375
68	Explorer Six-OK	M	6-3½x4½		96-3200	230.0	7.50	186-1500 (EA)	N	In	L	2112N	1.64	1.40	1.50	1.25	.311	.311	.310	.310
69	Master Six-OL	M	6-3½x4¾		105-3200	237.0	7.50	192-1500 (EA)	N	In	L	2112N	1.64	1.40	1.50	1.25	.311	.311	.310	.310
70	Super Six-Commodore-Z	M	6-4x4½		145-3200	339.2	7.20	265-2000	N	In	L	Aus	1.83	1.67	1.72	1.56	.356	.356	.373	.373
71	Super Six-Stevedor-ZS	M	6-4x4½		130-2800	339.2			N	In	L	Aus	1.83	1.67	1.72	1.56	.356	.356	.373	.373
72	Waukesha (12) ICK	Ind	4-2½x3½	16-2600	16-2400	61.3	5.70	40-1700 (BE)	N	So	L	SII	1.12	.937	1.00	.812	.229	.250	.312	.312
73	(12) FC	T,Tr,Ind	4-3¼x4	38-2200	35-2400	133.0	5.56	96-1200 (BE)	N	In	L	SII	1.34	1.34	1.18	1.18	.281	.281	.312	.312
74	(11) 195GL	T,Tr,Ind	4-3¼x3¾	45-2400	37-2000	144.0	6.75	110-1600 (BE)	W	In	I	SII	1.31	1.13	1.16	1.06	.312	.281	.372	.372
75	(12) XAH	T,Tr,Ind	4-3⅝x4½	47-2000	44-2000	186.0	5.50	131-1400 (BE)	N	In	L	SII	1.66	1.66	1.37	1.37	.362	.276	.375	.375
76	(11) 195GL	T,Tr,Ind	6-3½x3¾	67-2400	59-2200	216.0	6.75	176-1400 (BE)	W	In	I	SII	1.31	1.12	1.16	1.06	.312	.281	.372	.373
77	(11) 199GL	T,Tr,Ind	6-3⅝x4	77-2200	68-2800	265.0	6.50	223-1200 (BE)	W	In	I	SII	1.40	1.28	1.25	1.12	.309	.276	.375	.375
78	(11) 195GL	T,Tr,Ind	6-4x4	85-2462	77-2200	302.0	6.20	240-1200 (BE)	D	In	I	SII	1.84	1.69	1.68	1.44	.344	.344	.373	.372
79	(11) 195GKA	T,Tr	6-4½x4	122-3000	98-2200	320.0	6.29	243-1600 (BE)	N	In	I	SII	1.84	1.69	1.68	1.44	.406	.411	.373	.372
80	(11) 6MZA	T,B,Ind,Tr	6-4½x4½	128-2800	82-2000	404.0	5.60	288-1600 (BE)	N	In	L	SII	1.93	1.68	1.68	2.50	.375	.375	.375	.375
81	**(11) 135GKB	T,B,Tr	6-4½x5	147-2900	121-2200	426.0	6.25	337-1200 (BE)	D	In	I	SII	2.06	1.91	1.87	1.62	.456	.423	.435	.433

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

GASOLINE ENGINES—*continued*

VALVES				PISTONS				CONNECTING RODS			CRANKSHAFT								CARBURETOR			OVERALL DIMENSIONS (In.)				
Seats													Crank-Pin	MAIN BEARINGS												
Angle (Deg.)	Inserts Used	Insert Material (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure to—	Make	Size	Engine Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. No.)	Line Number
44½	N	.....	HG	Al	35	1.25x2.75	4	1045	6⅝	43	1045	.....	2.28x1.38	3	2.25x1.38	2.25x1.38	act	M-C	⅞	486	18	27½	36½	.....	1
44½	N	.....	HG	Al	35	1.25x2.75	4	1045	6⅝	43	1045	.....	2.28x1.38	3	3.25x1.38	2.25x1.38	act	M-C	⅞	484	18	27½	36½	.....	2
44½	N	.....	HG	Al	35	1.25x2.75	4	1045	6⅝	43	1045	.....	2.28x1.38	4	2.25x1.38	2.25x1.38	act	M-Z	⅞	632	18	29½	39½	.....	3
44½	N	.....	HG	CI	87	1.25x3.00	4	1045	6⅝	47	1045	.....	2.44x1.38	4	2.63x1.50	2.63x1.50	act	M-Z	1	682	18	31½	41½	.....	4
45	N	.....	HG	Al	61	1.25x2.75	4	1045	6⅝	31	1045	.....	2.00x1.38	3	2.25x1.63	2.25x1.44	afg	MaS	1	806	22	38½	36½	4	5
45	N	.....	HG	CI	62	1.25x2.75	4	1045	6⅝	31	1045	.....	2.00x1.38	4	2.25x1.75	2.25x1.63	afg	MaS	1	868	22	38½	36½	3	6
45	N	.....	HG	CI	72	1.25x2.75	4	1045	6⅝	41	1045	.....	2.28x1.38	4	2.63x1.88	2.63x1.76	afg	MaS	1	906	22	40	41½	3	7
45	E	A	HG	CI	96	1.25x3.44	4	1045	6¾	41	1045	.....	2.28x1.38	4	2.63x1.50	2.63x1.50	afg	MaS	1½	800	21¼	39	42½	.....	8
45	E	A	HG	CI	96	1.25x3.44	4	1045	6¾	41	1045	.....	2.28x1.38	4	2.63x1.88	2.63x1.88	afg	MaS	1½	800	22	42½	42½	3	9
45	N	.....	HG	Al	14½	.75x2.75	3	1040	6	23½	Al	Y	1.25x1.31	2			PS	Zen	⅝	u180	15	18¼	24	.....	10
30	N	.....	HG	Al	20½	.75x2.87	3	3140	6⅞	23½	CSt	N	1.75x1.12	3	2.00x1.88	2.00x1.62	acd	Zen	1½	u445	19	20½	29	.....	11
30	N	.....	HG	Al	24½	.875x3.06	3	1040	7	27½	CSt	N	2.00x1.25	7	2.50x1.31	2.50x1.93	acd	Zen	1½	u745	19	23½	30	4	12
30	N	.....	HG	Al	39½	1.00x3.62	3	1040	6	36	CSt	N	2.00x1.50	7	2.50x1.31	2.50x2.12	acd	Zen	1½	u875	20	26½	34	4	13
30	N	.....	HG	Al	44½	1.12x3.44	3	1035	8	39.2	CSt	Y	2.00x1.50	7	2.50x1.31	2.50x2.12	acd	Zen	2	980*	20	26½	34	4	14
45	N	.....	HG	Al	56	1.12x3.44	4	1035	8	39.2	CSt	.....	2.00x1.50	7	2.50x1.31	2.50x2.12	acd	Zen	2	1375*	21	29	39	3	15
45	N	.....	HG	CI	20	.688x2.19	3	.....	5	16	C1045	.....	1.50x.875	3	1.62x	1.62x	acd	Zen	⅝	350	21	.....	28½	N	16
30	E	Duc	HG	Al	.....	.875x2.95	4	.....	6½	.....	C1046	.....	2.38x1.50	4	2.75x1.38	2.75x1.94	acdf	Zen	1½	750	24½	.....	46	6	17
45	N	.....	HG	CIA	64	1.10x3.25	3	1045	8½	43	1045	N	1.80x2.12	2	1.90x3.00	1.90x3.00	Splash	Str	1	415	19½	22½	36¼	.....	18
45	N	.....	HG	Al	8	.625x2.12	3	1045	6	14	1045	N	1.56x1.25	2	ND3207	ND3207	acg	MaS	⅝	240	18¼	19½	27½	.....	19
45	E	CA	HG	CI	30	.875x2.75	3	1045	7¼	29	1045	N	1.75x1.38	3	2.12x1.43	2.12x1.18	abcdg	Zen	1	490	21¾	24½	35	.....	20
45	E	CA	HG	CI	45	1.10x2.92	4	1045	8¾	48	1045	N	2.00x1.50	3	2.50x2.50	2.00x1.87	abcdg	Zen	1	610	19½	25¼	41	6	21
45	N	.....	HG	CIA	69	1.10x3.56	4	1045	10¾	66	1045	N	2.00x2.25	3	2.00x4.18	2.00x3.50	acg	Str	1½	830	30½	28½	841½	.....	22
45	E	CA	HG	Al	46	1.00x3.85	4	1045	8	40	1045	N	2.00x1.50	7	2.62x2.00	2.62x1.25	abcdg	Zen	1½	1016	22½	28¼	53½	.....	23
30	E	St	HG	Al	40	1.12x3.59	4	1340	7¼	56	1045	.....	2.18x1.62	7	2.51x1.62	2.51x1.62	acdfg	Zen	1¼	872	25½	34½	48½	3	24
30	E	St	HG	Al	34.7	1.12x3.59	4	1340	7¼	56	1045	.....	2.18x1.62	7	2.51x1.62	2.51x1.62	acdfg	Zen	1¼	830	25½	34½	48½	3	25
30	E	Sto	HG	Al	31.9	1.12x3.11	4	1340	7¼	56	1045	.....	2.18x1.62	7	2.51x1.62	2.51x1.62	acdfg	Car	1¼	826	25½	34½	48½	3	26
30	Be	å	HG	Al	41.4	1.12x3.59	4	1340	7¼	56	1045	.....	2.18x1.62	7	2.51x1.62	2.51x1.62	acdfg	Ena	1¼	914	25½	34½	48½	3	27
30	E	St	HG	Als	42	1.13x3.59	4	1340	7¼	82	1045	.....	2.31x1.30	7	2.75x1.30	2.75x1.30	acdfg	Zen	1¼	963*u	24½	33½	48½	3	28
30	Be	Sto	HG	Al	29.9	1.13x3.11	4	1340	7¼	80.2	1045	.....	2.18x1.38	7	2.50x1.34	2.50x1.34	acdfg	Ena	1¼	872*u	25½	34½	45½	3	29
30	Be	å	HG	Al	41.4	1.13x3.54	4	1340	7¼	82	1045	.....	2.31x1.30	7	2.75x1.30	2.75x1.30	acdfg	Alg	1¼	995	24½	34½	45½	3	30
30	Be	å	HG	Al	38.2	1.00x3.37	4	1340	7½	45	CAS	.....	2.50x.927	5	3.00x1.22	3.00x1.71	acdfg	Car	.....	1211	27½	38¼	39½	2	31
30	Be	å	HG	Al	38.2	1.00x3.59	4	1340	7½	45	CAS	.....	2.50x.927	5	3.00x1.22	3.00x1.71	acdfg	Car	.....	1211	27½	38¼	39½	2	32
30	N	.....	HG	Al	29.5	.750x2.81	3	3140	6⅞	21	1045	N	1.75x1.12	3	2.00x1.50	2.00x1.62	acgr	Zen	1¼	410*	22½	21¼	325¼	6	33
30	N	.....	HG	Al	26	.875x2.90	4	CS	7	38	CS	N	2.00x1.25	7	2.50x1.31	2.50x1.93	acgr	Zen	1½	676*	22¾	23¼	41¼	4	34
30	N	.....	HG	Al	28	.875x2.92	3	1035	7	36	AS	N	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Zen	1½	675	22¾	23¼	41¼	4	35
30	N	.....	HG	Al	29.5	1.00x3.51	4	1040	6	37	1045	N	2.00x1.50	7	2.50x2.12	2.50x2.12	acgr	Zen	1½	960*	22¾	23¼	48¼	4	36
30	N	.....	HG	Al	49	1.12x3.44	4	AS	8	39.2	CS	.....	2.50x1.31	7	2.50x2.12	2.50x2.12	acgr	Zen	1½	980*	22¾	23¼	48¼	4	37
45	E	CA	HG	Al	49	1.25x3.88	4	AS	10½	70	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acdr	Hol	2	1050*	27½	32½	46¼	.....	38
45	E	CA	HG	Al	49	1.25x3.68	4	AS	10½	70	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acdr	Str	2	1150*	24½	29½	56¼	.....	39
45	N	.....	HG	Al	50	1.37x3.84	4	AS	11¼	84	NS	Y	2.87x2.00	4	3.00x3.00	3.00x3.62	acdr	Zen	2	1525*	29¼	33½	66	.....	40
45	N	.....	HG	Al	56	1.37x4.00	4	AS	11¼	84	NS	Y	2.87x2.00	4	3.00x3.00	3.00x3.62	acdr	Zen	2	1525*	29¼	33½	66	.....	41
45	N	.....	HG	Al	56	1.37x4.00	4	AS	11¼	84	CS	Y	2.87x2.25	4	3.00x3.00	3.00x3.62	acdr	Zen(2)	2	1525*	29¼	33½	66	.....	42
45	E	CA	HG	Al	49	1.25x3.68	4	AS	10½	164†	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acdr	Hol	2	1750*	38	33½	58½	.....	43
45	E	CA	HG	Al	49	1.25x3.68	4	AS	10½	164†	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acd	Str(2)	2	1750*	33¾	30½	58½	.....	44
45	E	CA	HG	Al	49	1.25x3.68	4	AS	10½	164†	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acd	Str(2)	2	1750*	33¾	30½	58½	.....	45
30	N	.....	HG	Al	29.5	.75x2.90	3	3140	6⅞	21	1045	N	1.75x1.12	3	2.00x1.50	2.00x1.62	acdag	Zen	1¼	410	22½	21¼	325¼	6	46
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdag	Zen(3)	2½	7500	45	64½	100½	00	47
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	V	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdag	Zen(3)	2½	7500	45	64½	100½	00	48
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	V	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdag	Zen(4)	2½	9900	44½	61½	142½	.....	49
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	V	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdag	Zen(4)	2½	9000	45	64½	121½	00	50
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	V	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdag	Zen(4)	2½	9000	45	64½	121½	00	51
45	E	T-12	HG	Al	91	1.43x4.37	5	1035	12½	113	CNS	V	2.50x2.12	7	3.00x1.75	3.00x2.87	abcdag	Zen(2)	1¾	2300	33	41½	60½	1	52
45	E	T-12	HG	Al	91	1.43x4.37	5	1035	12½	113	CNS	V	2.50x2.12	7	3.00x1.75	3.00x2.87	abcdag	Zen(2)	1¾	1900	33	34½	73½	.....	53
45	N	.....	HG	Alt	9.7	.750x2.63	3	C1041	6¼	19	C1048	.....	1.81x.875	4	3.06x1.63	3.06x1.50	acdg	Car	1¼	488	20¼	27	29½	.....	54
45	N	.....	HG	Alt	17.8	.875x3.06	3	C1141	6¾	23.7	C1046	.....	2.00x.813	5	2.50x1.00	2.50x1.52	acdf	Str	1½	700*	29¼	28½	29½	.....	55
45	N	.....	HG	Alt	16.7	.875x3.06	3	C1141	6¾	23.7	C1046	.....	2.00x.812	5	2.50x1.00	2.50x1.52	acdfg	Str	1½	710*	29¼	28½	29½	.....	56
45	N	.....	HG	Alt	16.7	.875x3.06	3	C1141	6¾	23.7	C1046	.....	2.00x.813	5	2.50x1.00	2.50x1.52	acdfg	Car	1½	710*	29¼	28½	29½	.....	57
45	N	.....	HG	Al	15	.750x2.56	4	CS	7¼	28	CS	Y	1.75x1.37	2	1.75x1.87	1.75x2.00	acdg	Zen	⅞	390	20½	22½	28½	.....	58
45	N	.....	HG	Al	.....	.688x2.16	3	CS	6	.....	CS	Y	1.56x1.23	2	1.90x1.62	1.90x1.25	acdgr	Zen	⅞	390	17½	19	28½	.....	59
45	N	.....	HG	CI	.....	1.00x3.75	3	Al	8½	.....	CS	Y	2.00x2.00	2	2.00x2.00	2.00x2.00	Splash	Zen	⅞	390	18½	24½	17½	.....	60
45	N	.....	HG	CI	19	.625x2.44	3	CS	7½	22	CS	N	1.50x1.75	2	1.90x2.75	1.90x2.75	acdg	Zen	1	347	17½	21½	34	.....	61
45	N	.....	HG	Al	15	.750x2.56	4	Al	7¼	18	CS	Y	1.75x1.37	3	1.75x2.37	1.75x2.37	acdgr	Zen	1½	420	20½	22½	34	.....	62
30	N	.....	HG	Al	29.5	.75x2.81	3	3140	6⅞	21.0	4140	.....	1.75x1.12	3	2.00x1.96	2.00x1.96	acdg	Zen	1½		24	21¼	31½	.....	63
45	N	.....	HG	Al	15	.750x2.56	4	Al	7¼	18	CS	Y	1.75x1.37	4	1.75x2.50	1.75x2.00	acdg	Zen	1½	529	24	20½	43¼	.....	64
45	N	.....	HG	Al	20	.875x2.75	4	Al	8½	30	CS	N	2.00x1.75	3	2.00x2.50	2.00x2.50	acd	Zen	1½	534	18½	25¼	39½	.....	65
45	N	.....	HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	7	2.00x3.00	2.00x1.75	acdg	Str	1½	768	20½	28¼	48½	.....	66
45	N	.....	HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	7	2.00x3.00	2.00x1.75	acdg	Str	1½	810	22½	28¼	48½	.....	67
30	N	.....	HG	Alt	28	.875x2.92	3	1035	7	36	1046†	N	2.00x1.25	7	2.50x1.31	2.50x1.93	acdgr	Zen	1½	684*	24½	23¼	40¼	.....	68
30	N	.....	HG	Alt	28	.875x2.92	3	1035	7	36	1046†	Y	2.00x1.25	7	2.50x1.31	2.50x1.93	acgr	Zen	1½	686*	24½	23¼	40¼	.....	69
30	N	.....	HG	Alt	.....	1.12x3.44	4	1035	8	39.2	1046†	Y	2.00x1.50	7	2.50x1.12	2.50x1.31	acr	Zen	1½	840	25	25¼	45¼	.....	70
30	N	.....	HG	Alt	.....	1.12x3.44	4	1035	8	39.2	1046†	Y	2.00x1.50	7	2.50x2.12	2.50x1.31	acr	Zen	.....	840	25	25¼	45¼	.....	71
45	N	.....	HG	Al	.....	.625x2.12	4	1045	6	14	1045	N	1.56x1.25	2g	ND1207	ND1207	ad	Op	⅝	195	14½	20½	21½	6	72
45	E	CA	HG	CI	.....	.875x2.75	4	1045	7¼	29	1045	N	1.75x1.86	3	2.12x1.18	2.12x1.43	abcdg	Op	⅝	290	19	26¼	37½	6	73
44½	N	.....	HG	CI	.....	1.25x2.75	4	1045	8¾	31½	1045	N	2.00x1.38	3	2.25x1.63	2.25x1.63	acdg	Op	1	480	19	27¼	36½	4	74
45	E	CA	HG	CI	.....	1.12x3.03	4	1045	8¾	48	1045	N	2.00x1.50	3	2.00x1.88	2.00x2.50	abcdg	Op	1	385	19	26¼	32½	5	75
45	N	.....	HG	CI	.....	1.25x1.75	4	1045	8¾	.....	1045	N	2.00x1.38	4	2.25x1.63	2.25x1.63	abcdg	Op	1	740	22	29	46½	3	76
44½	N	.....	HG	CI	.....	1.25x3.00	4	1045	8¾	.....	1045	N	2.25x1.37	4	2.63x1.88	2.63x1.75	abcdfg	Op	1	890	22	29	42½	3	77
44½	E	CA	HG	CI	.....	1.25x3.43	4	1045	8¾	.....	1045	Y	2.62x1.38	4	2.63x1.88	2.63x1.75	abcdfg	Op	1½	775	26	30½	43½	3	78
44½	E	CA	HG	CI	.....	1.25x3.44	4	1045	8¾	47½	1045	Y	2.62x1.38	4	2.63x1.88	2.63x1.75	abcdfg	Op	1½	775	26	30½	43½	3	79
45	E	CA	HG	Al	.....	1.00x4.00	4	1045	8¾	48	1045	N	2.25x1.50	7	2.63x1.63	2.63x2.75	abcdg	Op	1½	920	28½	34	43½	3	80
44½	E	St	HG	Al	.....	1.50x3.63	4	1045	9½	.....	1045	Y	2.80x1.62	7	3.25x1.88	3.25x2.88	abcdfg	Op	1½	1325	26	37½	46½	3	81

For abbreviations, see pages 250 and 251

For Directory of the Engine Manufacturers listed above, see page 263

Line Number	ENGINE MAKE AND MODEL	Designed for	Number of Cylinders, Bore and Stroke (In.)	MAXIMUM BRAKE Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	VALVES									
				With Bare Engine	With Standard Accessories						Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.)		Min. Port Diameter (In.)		Lift (In.)		Stem Diameter (In.)	
													Intake	Exhaust	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
	Waukesha—Cont'd																			
1	.....**(11) 135GZB	T,B,Tr	6-4¾x8	153-2800	120-2200	451.0	6.30	354-1200 (BE)	N	In	...	SII	2.06	1.81	1.87	1.62	.452	.405	.434	.434
2	.....(11) 140-GK	T,B,Ind,Tr	6-4½x5½	169-2250	117-1900	525.0	6.40	401-1000 (BE)	W	In	L	SII	2.12	1.86	1.87	1.37	.531	.434	.434	.434
3	.....**(11) 140GKB	T,B,Tr	6-4½x5½	177-2600	135-2000	525.0	6.40	425-1000 (BE)	W	In	I	SII	2.12	1.86	1.87	1.37	.540	.540	.437	.437
4	.....(11) 140GZ	T,B,Tr	6-4½x5½	169-2250	135-1800	554.0	6.40	448-1100 (BE)	W	In	...	SII	2.12	1.86	1.87	1.37	.524	.524	.437	.437
5	.....**(11) 140GZB	T,B,Tr	6-4½x5½	189-2600	143-2000	554.0	6.40	448-1100 (BE)	W	In	I	SII	2.12	1.86	1.87	1.37	.524	.524	.437	.437
6	.....(11) 145-GK	T,B,Ind,Tr	6-5⅛x6	216-2600	167-1800	779.0	6.20	596-1000 (BE)	W	In	I	SII	2.37	1.94	2.12	1.62	.594	.531	.500	.500
7	.....**(11) 145GKB	T,B,Tr	6-5⅛x6	240-2400	178-2000	779.0	6.20	595-1000 (BE)	W	In	I	SII	2.56	2.03	2.31	1.81	.600	.600	.500	.500
8	.....**(11) 145GZB	T,B,Tr	6-5⅛x6	250-2400	185-2000	817.0	6.00	630-1100 (BE)	W	In	I	SII	2.37	1.94	2.12	1.62	.594	.531	.497	.496
9	.....(12) 6WAK	T,Tr,Ind	6-4½x6½	222-1600	208-1500	1197.0	6.20	892- 900 (BE)	W	In	I	SII	2.65	2.22	2.37	2.00	.656	.656	.500	.500
10	.....**(11) 6WAKB	T,Tr,Ind	6-4½x6½	280-1600	256-1600	1197.0	6.20	1000-1030 (BE)	W	In	I	SII	2.65	2.22	2.37	2.00	.656	.656	.500	.500
11	.....*(12) 6NKR	Ind	6-7x8½	316-1150	276-1050	1905.0	6.50	1520- 900 (BE)	W	In	I	SII	3.22	2.76	2.87	2.50	.709	.709	.620	.619
12	.....^(12) 6LRO	Ind	6-6½x8½	432-1100	405-1000	2894.0	6.00	2280- 800 (BE)	W	Se	I	SII	3.50	3.00	3.25	2.75	.790	.840	.562	.562
13	.....^(12) 6LRZ	Ind	6-6½x8½	515-1200	482-1100	3520.0	6.10	2775- 800 (BE)	W	Se	I	SII	4.19	3.41	3.62	3.12	.770	.898	.681	.681
14	Willys CJ-3A	Ind	4-3½x4½	63-4000	.....	134.2	6.48	105-2000 (BE)	N	In	L	CHS	1.53	1.48	1.34	1.29	.359	.339	.373	.373
15	475	C,T,Ind	4-3½x4½	75-4000	.....	134.2	7.48	114-2000 (BE)	N	In	F	(o)	2.00	1.48	1.84	1.29	.260	.351	.374	.372
16	575	C	4-3½x3½	75-4000	.....	161.0	6.90	125-2000 (BE)	N	In	L	(o)	1.37	1.29	1.12	1.12	.284	.300	.341	.340
17	585	C,T,Ind	6-3½x3½	90-4200	.....	161.0	7.80	135-1600 (BE)	N	In	F	CHS	1.75	1.29	1.44	1.13	.260	.300	.374	.340
18	6-226	C,T	6-3⅛x4⅛	115-3650	.....	226.2	7.30	190-1600 (BE)	N	In	L	SII	1.16	1.15	1.38	1.19	.352	.332	.341	.339
19	Wisconsin VE-4	Tr,Ind	4-3x3½	22-2600	22-2600	91.9	6.44	80-1700 (EA)	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
20	.....VF-4	Tr,Ind	4-3½x3½	25-2400	25-2400	107.7	6.07	87-1700 (EA)	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
21	.....VP4D	Tr,Ind	4-3⅛x4	31-2200	31-2200	154.0	4.64	88-1400 (EA)	N	Se	L	Aus	1.56	1.56	1.37	1.37	.275	.275	.309	.309
22	.....VG4D	Ind	4-3⅛x4	36-2200	36-2200	154.0	5.05	94-1500 (EA)	N	Se	L	St	1.56	1.56	1.37	1.37	.275	.275	.309	.309

ABBREVIATIONS

†—Duplex.
‡—Stellite seed.
*—Weight complete with ignition and carburetor.
**—Intake, Moly Iron; exhaust, Stellite Steel.
§—As mounted in chassis on tilt.
‖—Also available in reduction gear models.
▼—Also available in R.H. rotation.
▼▼—High output.
ŧ—Tocco hardened.
‡‡—Forked 23.7 oz.—Blade 22.4 oz.
◆—Weight per pair.
‖—4 Rings used on Truckc and 5 on Coaches.
‡‡—5.20 for gasoline—6.00 for natural gas or butane.
ƒ—Dual.
ƒƒ—Cast Iron 315, Aluminum 250 lbs.
‡—Super-Charged engine.
‡‡—Weight of piston only.
•—Liquid petroleum gas engine.
ŧ—Intake, Steel; exhaust, Stellite Steel.
††—Exhaust seat stellite faced
^—Including clutch.
●●—Piston only.
(2)—Two used.
(3)—Three used.
(4)—Four used.
(7)—Roller bearings.
(11)—Automotive power ratings.
(12)—Industrial power ratings.
(14)—Unisy Type 307 head, 3140 steel stem.
(a)—Main bearings.
(b)—Wristpins.
(c)—Connecting rods.
(d)—Camshaft.
(e)—Accessory drive.
(f)—Valve lifters or rocker arms and shafts.
(g)—Timing gears or chain.
(h)—Intake 30, Exhaust 45.
(i)—Cylinder walls.
(j)—Timken Cone 14138A, Cup 14276.
(k)—Intake 30, Exhaust 44.
(l)—Intake, 31°; exhaust, 46°.
(m)—A model in this series is also available for use with liquid petroleum gases. The engine will have a higher compression ratio, brake horsepower and torque.
(o)—Unisy 21-12 (Type 307) with valve rotators on 473.
(p)—Hydraulic valve lifters and cylinder walls.
(q)—Tocco hardened journals on VT-346 and VTX-346 models.
(r)—Reverse gear.
(s)—Fan drive gear.
(t)—Tappets and valve mechanism.
(u)—Complete with SAE housing.
(v)—24⅝ for T-137; 23 for T-164 and T-165.
(w)—36⅛ for T-137, 37⅝ for T-164 and T-165.
(x)—Sodium cooled.
(y)—29⅛ for T-137; 31⅞ for T-164 and T-165.
(z)—Intake 30, Exhaust 29.
A—Alloy.
AC—Aluminum or cast iron.
Al—Alloy Iron.
Al—Aluminum alloy.
Als—Aluminum alloy, anodized.
Alb—Aluminum bronze.
Alg—Algas.
Als—Aluminum alloy with steel strut.
Alst—Aluminum alloy with steel strut, tin plated.
Alt—Aluminum alloy (Tin coated).
AS—Alloy steel.
Atn—Aluminum alloy, tinplated and knurled.
Aus—Austenitic steel.
B—Buses.
BB—Ball & Ball.
BE—Bare engine.
Be—Used in both intake and exhaust seats.
C—Cars.
CA—Cast alloy. **CAl**—Cast alloy iron.
Car—Carter Carburetor Corp.
Ch—Chain.
CHS—Chrome nickel silicon steel.
CI—Cast iron.
CIA—Cast iron, anodized.
CMS—Carbon manganese steel.
CMT—Chromium tungsten steel.
CNS—Chrome nickel steel.
CS—Carbon steel.
D—Dry liners.
DC—Durachrome castings.
DFS—Drop forged steel.
DI—Ductile Iron.
Duc—Durachrome.
Dur—Duraluminum.
E—Used on exhaust valve seats.
EA—Engine with standard accessories.
Eat—Eatonite.
Ecl—Eclipse.
EFS—Electric furnace steel.
Ens—Ensign.
F—F-head.
H—Horizontal motor.
HC—Helical gear and chain.
HFA—Hard facing alloy.
HG—Helical gear.
Hh—Horizontal in head (Valve).
Hol—Holley Carburetor Co.
I—In head (Valves).
In—Integral.
Ind—Industrial.
Jad—Jadson.
L—Valves at side (L-Head).

For Directory of the Engine Manufacturers listed above, see page 263

1953-52 Outboard Engine Shipments by Hp Ratings

As reported by Industry Division, Bureau of the Census

Horsepower	1953 Number Shipped	1953 Value at Plant	1952 Number Produced	1952 Value at Plant
Under 3	8,378	$ 924,000	88,019	$4,171,000
3.0-3.9	69,112	6,073,000		
4.0-4.9	113,222	12,414,000	95,345	10,396,000
5.0-5.9	90,443	10,723,000	90,158	10,534,000
9.0-10.9	44,146	7,363,000	28,513	4,670,000
11.0 and over	138,080	29,746,000	75,356	16,962,000
Total	463,356	$67,045,000	337,419	$46,129,000

1953-52 Outboard Engine Shipments by Displacement

As reported by Industry Division, Bureau of the Census

Cu. In. Displacement	1953 Number Shipped	1953 Value at Plant	1952 Number Shipped	1952 Value at Plant
Under 4	8,008	$ 489,000	42,997	$3,742,000
4.0-6.9	59,373	5,404,000		
6.0-8.9	100,381	10,673,000	83,986	9,603,000
9.0-11.9	92,217	9,445,000	85,182	9,410,000
12.0-14.9	54,630	8,192,000	125,574	23,988,000
15.0 and over	153,746	32,832,000		
Total	463,356	$67,045,000	337,419	$46,129,000

GASOLINE ENGINES—*concluded*

VALVES				PISTONS				CONNECTING RODS			CRANKSHAFT								CARBU-RETOR			OVERALL DIMENSIONS (In.)				
Seats													Crank-Pin	MAIN BEARINGS												
Angle (Deg.)	Inserts Used?	Insert Material (S.A.E. No.)	Camshaft Drive—Type	Material	Weight with Pins, Rings, Bushings (Oz.)	Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Material	Center to Center Length (In.)	Weight with Bushing and Cap (Oz.)	Material	Counter Balance Used	Diameter and Length (In.)	Number	Diameter and Length (In.) Front	Diameter and Length (In.) Rear	Oil Pressure to—	Make	Size	Engines Weight without Carburetor or Ignition (Lb.)	Width	Height	Length	Clutch Housing (S.A.E. No.)	Line Number
45	R	St	HG	Al	.....	1.50x3.62	4	1045	9½	.....	1045	Y	3.00x1.62	7	3.25x1.99	3.26x2.50	abcdfg	Op	1½	1485	26	37½	48⅛	3	1
(a)	R	CA	HG	Al	.....	1.37x3.87	4	1045	10¼	85	1045	N	2.62x2.00	7	3.25x1.99	3.25x3.00	abcdfg	Op	1½	1300	23½	41¾	50½	3	2
(a)	R	St	HG	Al	.....	1.37x3.87	4	1045	10¼	85	C1046	Y	2.62x2.00	7	3.25x1.99	3.25x3.00	abcdfg	Op	1½	1485	23½	41¾	50½	3	3
(b)	R	CA	HG	Al	.....	1.37x3.87	4	1046	10¼	85	1045	N	2.62x2.00	7	3.25x1.99	3.25x3.00	abcdfg	Op	1½	1300	23½	41¾	50½	3	4
(b)	R	St	HG	Al	.....	1.62x4.50	4	1045	10¼	85	C1046	Y	2.62x2.00	7	3.25x1.99	3.25x3.00	abcdfg	Op	1½	1300	23½	41¾	50½	3	5
(b)	E	CA	HG	Al	.....	1.62x4.87	4	1045	11⅝	133	1045	N	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdfg	Op	2	1810	25¼	48½	57½	2	6
(b)	E	St	HG	Al	.....	1.62x4.87	4	1045	11⅝	133	C1046	Y	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdfg	Op	2	1810	25¼	48½	57½	2	7
(b)	E	St	HG	Al	.....	1.62x4.86	4	1045	11⅝	133	1045	Y	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdfg	Op	2	1810	25¼	48½	57½	2	8
(b)	E	CA	HG	CI	.....	1.87x5.50	4	1045	13¾	195	1045	N	3.37x2.37	7	4.00x2.19	4.00x3.25	abcdfg	Op	2	3030	30¼	59½	65½	0	9
(b)	E	St	HG	Al	.....	1.87x5.50	4	1045	13¾	195	1045	Y	3.37x2.37	7	4.00x2.19	4.00x3.25	abcdfg	Op	2	3030	30¼	59½	65½	0	10
(b)	E	CA	HG	CI	.....	2.50x5.03	4	1045	16¾	.....	1045	N	4.37x2.78	7	5.25x3.44	5.25x5.56	abcdfg	Op	2½	5800	42	69½	82½	00	11
30	E	CA	HG	CI	.....	2.25x7.75	5	1045	18½	474	1045	N	4.00x3.75	7	4.25x4.81	4.25x5.80	abcdfg	Op	2½	9840	48½	88	95½	00	12
30	E	CA	HG	CI	.....	3.00x8.25	6	1045	21⅝	.....	1045	N	6.00x3.75	7	5.50x4.75	5.50x5.80	abcdfg	Op	4	11290	48½	72	90½	00	13
45	N	.....	HG	Alt	19	.812x2.78	3	1038	9⅛	34	1040	Y	1.93x1.30	3	2.33x1.92	2.33x1.75	acdg	Car	1¼	344	19	26⅛	26¼	5	14
45	N	.....	HG	Alt	19	.812x2.78	3	1141	9⅛	34	1040	Y	1.94x1.31	3	2.33x1.92	2.33x1.75	acdfg	Car	1¼	390	19½	30¼	26	5	15
45	N	.....	HG	Alt	16.1	.750x2.66	3	1141	8½	22	1040	.....	1.88x.899	4	2.25x1.30	2.25x1.41	acdg	Zen	1¼	405	21	28¼	31	5	16
45	N	.....	HG	Alt	16.2	.750x2.66	3	1141	8½	22	1040	.....	1.88x.899	4	2.25x1.30	2.25x1.41	acdfg	Car	1¼	390	19½	27	31	5	17
(h)	N	.....	Ch	Alt	20.9	.899x2.78	4	1035	7	29.6	1046	.....	2.06x1.53	4	2.38x2.30	2.38x2.38	acdg	Car	1½	850*	25½	33	46½	.....	18
45	Bo	MI	HG	Al	19	.750x2.50	4	1035	8½	22	1045	N	1.75x1.12	2	Timken	Timken	PJ	Zen	⅞	295*	21½	25½	29¼	.....	19
45	Bo	MI	HG	Al	20	.750x2.56	4	1035	8½	22	1045	N	1.73x1.12	2	Timken	Timken	PJ	Zen	⅞	295*	21½	25½	29¼	.....	20
45	Bo	**	HG	Al	28	.937x2.75	4	1035	8½	29	1045	N	1.88x1.25	2	Timken	Timken	PJ	MaS	1	410*	24	28¼	28½	.....	21
45	Bo	**	HG	Al	28.0	.937x2.75	4	1035	8½	58	1046	Y	2.13x1.31	2	Timken	Timken	PJ	MaS	1	410*	24	28¼	28½	.....	22

M—Marine.
MA—Manganese alloy.
MaS—Marvel-Schebler Carburetor Div.
M-C—Marvel-Schebler or Carter.
MCS—Molybdenum chrome steel.
MI—Moly Iron.
MS—Manganese steel.
MSA—Moly-Silicon alloy.
M-Z—Marvel-Schebler or Zenith.
N—No or none.
Nic—Nickel chrome.
Nif—Nifferrite.
Nir—Ni-Resist.
NS—Nickel steel.
Op—Optional.
PJ—Pump jet.
Pro—Proferall.
R-P—Rochester Products.
SA—Special alloy.
SB—Spiral bevel gear.
Se—Separate.
SF—Steel forging.
Sil—Silichrome steel.
Spec—Special.
SS—Semi-steel.
St—Stellite steel.
Ste—Steel.
Str—Stromberg-Elmira Div.
T-12—Thompson Products No. 12
Th—Valve opposite (T-Head).
T—Trucks.
TA—Tungsten alloy.
Til—Tillotson Mfg. Co.
TP—Thompson Products.
Tr—Tractors.
Tun—Tungsten steel.
W—Wet liners.
WM—Wausau Cast Moly No. 1.
Y—Yes.
Zen—Zenith Carburetor Div.

Diesel Engines For Use In Diesel-Electric Locomotives

ENGINE MAKE AND MODEL	Cylinder Arrangement	Cycle	No. of Cylinders, Bore and Stroke (In.)	Displacement (Cu. In.)	Compression Ratio	Maximum Brake HP at Specified RPM	Continuous HP at Specified RPM	Supercharger Used	Weight (Lb.)	OVERALL DIMENSIONS (In.) Length	Width	Height
Alco 251A	I	4	6-9x10½	4060	13.00	600	1000	Yes	21380	137	50½	91
241	V	4	12-9x10½	8016	13.00	†1600	1000	Yes	31400	186⅞	69⅝	84½
244	V	4	16-9x10½	10688	13.00	†2250	1000	Yes	38400	189⅞	69⅝	84½
539	I	4	6-12½x13	9572	12.50	†1000	740	Yes	34000	191	67½	97
539	I	4	6-12½x13	9572	11.60	1625	740	No	33200	187	67½	97
Baldwin 606	I	4	6-12¾x15½	11660	14.50	975-625	†900-625	No	42360	208½	64½	97½
606A	I	4	6-12¾x15½	11660	13.45	1315-625	†1200-625	Yes	43700	208½	69½	97½
606A	I	4	6-12¾x15½	11660	13.45	1750-625	†1600-625	Yes	58100	240½	73½	97½
Cooper-Bessemer FWL-6T	I	4	6-9x10½	4058	12.70	880-1000	880-1000	Yes	22000	134	59½	80½
FWL-8T	I	4	8-9x10½	5344	12.70	1200-1000	1200-1000	Yes	25000	164	59½	80½
FVA-8LT	V	4	8-9x10½	5344	12.70	1200-1000	1200-1000	Yes	21500	102½	66	75½
FVA-12LT	V	4	12-9x10½	8016	12.70	1760-1000	1760-1000	Yes	28500	133½	66	75½
FVA-16LT	V	4	16-9x10½	10688	12.70	2400-1000	2400-1000	Yes	35000	166½	66	75½
Electro-Motive 6-567C	V	2	6-8½x10	3402	16.00	.....	†900-600	No*	13600	115½	64½	84½
8-567C	V	2	8-8½x10	4536	16.00	.....	†900-635	No*	16000	139⅞	62½	92½
12-567C	V	2	12-8½x10	6804	16.00	.....	†1200-600	No*	25000	174½	64½	90½
16-567C	V	2	16-8½x10	9072	16.00	.....	†1750-635	No*	32000	212½	62½	90½
Fairbanks-Morse 6-38D8⅛	O	2	6-8⅛x10	6221	16.10	1275-800	1275-800	No	26100	174	61	108½
8-38D8⅛	O	2	8-8⅛x10	8295	16.10	1720-850	1720-850	No	33000	208	68	108½
10-38D8⅛	O	2	10-8⅛x10	10369	16.10	2120-850	2120-850	No	39250	226½	67	108½
12-38D8⅛	O	2	12-8⅛x10	12443	16.10	2540-850	2540-850	No	44000	258	67	108½
10-38F5¼	O	2	10-8¼x7¼	3139	15.00	825-1200	825-1200	No	13200	167½	42½	74½
12-38F5¼	O	2	12-8¼x7¼	3767	15.00	990-1200	990-1200	No	15800	177	44	70½

ABBREVIATIONS

*—Engine has Roots type blower for scavenging use only, not super-charged.
†—Horsepower available for traction.
I—In line.
O—Opposed piston.
V—"V" type engine.

For Directory of the Engine Manufacturers listed above, see page 263

DIESEL ENGINES 1955

TRUCKS • BUSES • TRACTORS

Line Number	ENGINE MAKE AND MODEL	Built Under License from	GENERAL: Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.)	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	VALVES: Arrangement	VALVES: Intake Port Diameter and Lift (In.)
1	Atlas 4S		I,M	DI	4-9x10	W	4	2672			192-750	14.00	850	78	98.04		13000	15100	HI	3.25- .875
2	" 4S		I,M	DI	5-9x10	W	4	3340			242-750	14.00	850	78	98.04		14000	16100	HI	3.25- .875
3	" 4S		I,M	DI	6-9x10	W	4	4008			290-750	14.00	850	78	98.04		17100	20000	HI	3.25- .875
4	"4S		I,M	DI	6-9x10	W	4	4008			435-750	13.00	900	115	42.54		18500	20800	HI	3.25- .875
5	4S		I,M	DI	8-9x10	W	4	5344			385-750	14.00	850	78	98.14		21600	24500	HI	3.25- .875
6	"4S		I,M	DI	8-9x10	W	4	5344			580-750	13.00	900	115	39.34		22800	25600	HI	3.25- .875
7	35-S-4	Own	I,M	DI	4-6 x8	W	4	1069			300-1225	14.60		78	29.04		6000	10900	VI	2.44-
8	35-S-6	Own	I,M,R	DI	6-6 x8	W	4	1643			300-1225	14.60		78	25.04		8500	10900	VI	2.44-
9	35-SX-6	Own	I,M,R	DI	6-6 x8	W	4	1643			300-1225	13.15		120	30.04		9000	10900	VI	2.44-
10	Buda 2BD-77	Lanova	M,I	Ach	2-4 x4	W	4	77	17-2000	15.8-2000	13-1300	15.30	725	74	48.14	49-1400	600	820	VI	1 - .429
11	4BD-153	Lanova	Tr,I	Ach	4-3 x4	W	4	153	40-2400	35-2400	27-2000	15.30	725	70	28.2	104-1400	780		VI	1 - .429
12	4BD-182	Lanova	Tr,I	Ach	4-4 x4	N	4	182	46.5-2400	40-2400	31-1800	15.00	725	75		122-1400			VI	1 - .429
13	6BD-230	Lanova	T,Tr,I	Ach	6-3 x4	W	4	230	60-2400	52-2400	40-1800	15.30	725	76	21.5	156-1400	880		VI	1 - .429
14	6-DT-317	Lanova	T,Tr,I	Ach	6-3 x5	D	4	317	90-2300	75-2300	56-1800	14.50	725	78	20.3	224-1500	1133		VI	1 - .426
15	6-DTM-317	Lanova	M	Ach	6-3 x5	D	4	317	90-2300	75-2100	56-1800	14.50	725	78	22.3	224-1500		1250	VI	1 - .486
16	6-DT-466	Lanova	T,Tr,I	Ach	6-4 x5	D	4	466	113-2300	97-2000	80-1800	14.20	725	79	19.1	268.5-1100	1435		VI	1.58- .486
17	6-DTM-466	Lanova	M	Ach	6-4 x5	D	4	466	113-2300	97-1800	75-1600	14.20	725	79	23.7	268-1100		1775	VI	1.58- .478
18	6DA-779	Lanova	T,Tr	Ach	6-5 x6	W	4	779	185-2100	167-2000	146-1800	14.20	725	80.5		540-1400			VI	2 - .540
19	6DA-844	Lanova	T,Tr,I	Ach	6-5 x6	W	4	844	215-2100	194-2000	166-1800	14.2	725	88.5	17.2	640-1500	2850		VI	2.00- .560
20	6DC-1879	Lanova	R,I	Ach	6-6 x8	W	4	1879	248-1100	222-1100	171- 900	13.00	725	80	40.6	1330- 650	8950		VI	2.50- .687
21	6DCM-1879	Lanova	M	Ach	6-6 x8	W	4	1879	248-1100	222-1100	186-1000	13.00	725	78	34.9	1330- 650		6500	VI	2.50- .687
22	6DAM-844	Lanova	M	Ach	6-5 x6	W	4	844	215-2100	194-2000	166-1800	14.2	725	86.5	23.5	640-1500		3900	VI	2.00- .540
23	6DAS-844	Lanova	T,B,Tr,I	Ach	6-5 x6	W	4	844	260-2100	246-2000	186-1600	12.8	725	106		780-1500			VI	2.00- .540
24	6DASM-844	Lanova	M	Ach	6-5 x6	W	4	844	260-2100	246-2000	186-1600	12.8	725	106		780-1500			VI	2.00- .540
25	6DA-1125	Lanova	T,R,I	Ach	6-5 x6	W	4	1125	288-2100	736-2000	187-1600	14.2	725	82.5		830-1300			VI	2.00- .540
26	6DAM-1125	Lanova	M	Ach	6-5 x6	W	4	1125	288-2100	236-2000	187-1600	14.2	725	82.5		830-1300			VI	2.00- .540
27	6DAS-1125	Lanova	T,Tr,I	Ach	6-5 x6	W	4	1125	350-2100	312-2000	220-1600	12.8	725	97		1040-1400			VI	2.00- .540
28	6DASM-1125	Lanova	M	Ach	6-5 x6	W	4	1125	350-2100	312-2000	220-1600	12.8	725	97		1040-1400			VI	2.00- .540
29	4DC-645	Lanova	I	Ach	4-5 x6	W	4	645	145-1800	127-1600	97-1400		725	95		484-1100			VI	2.00- .540
30	*6DCS-1879	Lanova	I	Ach	6-6 x8	W	4	1879	330-1200	297-1200	212- 900		725	99		1580- 700			VI	2.50- .687
31	*6DCSMR-1879	Lanova	M	Ach	6-6 x8	W	4	1879	330-1200	292-1200	212- 900		725	99		1580- 700			VI	2.50- .687
32	8DC-2505	Lanova	I	PC	8-6 x8	W	4	2505	386-1300	347-1300	264-1000	13.00	825	83.5	37.1	1810- 700	9800		VI	2.50- .687
33	*8DCS-2505	Lanova	I	PC	8-6 x8	W	4	2505	516-1300	456-1300	348-1000	13.00	875	110	31.0	2380- 800	10500		VI	2.50- .687
34	6DA-273		T	DI	6-3 x4	N	4	273	85-2800	75-2800	53-1800	14.20	825	85.5	15.7	284-1400	830		VI	1.53- .439
35	6DAS-516		T	DI	6-4 x5.5	W	4	516	165-2400	156-2400	110-1800	13.40	825	94.5	17.2	404-1600	1900		VI	1.75- .474
36	2BDMR-77	Lanova	M	Ach	2-4 x4	W	4	77	17-2000	17-2000	16-2000	15.30	725	80.3	51.3	49-1400		820	VI	1.38- .429
37	4BDMR-153	Lanova	M	Ach	4-3 x4	W	4	153	40-2400	40-2400	32-2000	15.30	725	82.8	31.3	104-1400		1900	VI	1.38- .429
38	4BDMR-182	Lanova	M	Ach	4-4 x4	N	4	182	47-2400	47-2400	38-2000	15.00	725	82.7		122-1400			VI	1.38- .429
39	6BDMR-230	Lanova	M	Ach	6-3 x4	W	4	230	60-2400	60-2400	48-2000	15.30	725	82.6	25.0	156-1400		1200	VI	1.38- .429
40	6DAMR-273		M	DI	6-3 x4	N	4	273	85-2800	85-2800	60-2000	14.20	825	87		284-1400			VI	1.53- .439
41	6DTMR-317	Lanova	M	Ach	6-3 x5	D	4	317	90-2300	90-2300	72-2000	14.50	725	89.9		224-1500			VI	1.38- .426
42	6DTMR-466	Lanova	M	Ach	6-4 x5	D	4	466	114-2000	100-2000	80-1800	14.20	725	75.2		268.5-1100			VI	1.58- .486
43	6DAMR-779	Lanova	M	Ach	6-5 x6	W	4	779	185-2100	167-2100	146-1800	14.20	725	83.6		540-1400			VI	2.00- .540
44	6DAMR-844	Lanova	M	Ach	6-5 x6	W	4	844	215-2000	184-2000	165-1800	14.20	725	86		640-1500			VI	2.00- .560
45	6DASMR-844	Lanova	M	Ach	6-5 x6	W	4	844	275-2000	247-2000	196-1800	12.80	725	102.1		780-1500			VI	2.00- .540
46	6DAMR-1125	Lanova	M	Ach	6-5 x6	W	4	1125	285-2000	245-2000	206-1800	14.20	725	80.6		830-1300			VI	2.00- .540
47	6DASMR-1125	Lanova	M	Ach	6-5 x6	W	4	1125	340-2000	302-2000	240-1800	12.80	725	92.9		1040-1400			VI	2.00- .540
48	6DATMR-1125	Lanova	M	TC	6-5 x6	W	4	1125		300-1900	255-1600	12.80		112					VI	2.00- .540
49	6DCMR-1879	Lanova	M	Ach	6-6 x8	W	4	1879	262-1300	238-1300	186-1000	13.00	725	78.4		1330- 650			VI	2.50- .687
50	6DCSMR-1879	Lanova	M	Ach	6-6 x8	W	4	1879	349-1300	302-1300	232-1000		725	97.8		1580- 700			VI	2.50- .687
51	8DCMR-2505	Lanova	M	PC	8-6 x8	W	4	2505	386-1300	347-1300	296-1200	13.00	825	78	41.7	1810- 700		12350	VI	2.50- .687
52	8DCSMR-2505	Lanova	M	PC	8-6 x8	W	4	2505	516-1300	455-1300	400-1200	13.00	875	103.4	32.5	2380- 800		13000	VI	2.50- .687
53	6DAT-779	Lanova	T,Tr,I	TC	6-5 x6	W	4	779	275-2100			12.50							VI	2.00- .540
54	Caterpillar D-311	Own	Tr,M,I	PC	4-4x6	W	4	252	67-2000	52-2000	40-1600	16.50		70	47.24	164-1300	1990	2410	VI	1 - .421
55	D-315	Own	Tr,M,I	PC	4-4 x5	W	4	350	82-2000	71-2000	54-1800	16.0		68	42.24	228-1000	2280	2870	VI	2 - .434
56	D-318	Own	Tr,M,I	PC	6-4 x5	W	4	525	119-2000	107-2000	81-1800	16.0		68	36.74	344-1200	2970	3615	VI	2 - .434
57	D-326	Own	Tr,M,I	PC	6-5 x6	W	4	743	170-2000	167-2000	119-1800	17.00		68	32.04	540-1200	3770	4490	VI	2 - .495
58	D-337	Own	Tr,M,I	PC	6-5 x6	W	4	743	250-2000	233-2000	161-1600	17.00		107	29.34	740-1200	4230	4720	VI	2 - .495
59	D-8800	Own	Tr,M,I	PC	4-5 x8	W	4	831	102-1000	88-1000	79-1000	15.7		75	50.44	561-900	4380	5275	VI	2 - .466
60	D-13000	Own	Tr,M,R,I	PC	6-5 x8	W	4	1246	190-1200	181-1200	143-1200	15.7		75.8	37.54	910-850	5300	7065	VI	2 - .466
61	D-397	Own	M,I,R	PC	12-5 x8	W	4	2493	520-1300	493-1300	450-1200	16.00		114.4	28.84	2420-900	11620	14425	VI	2 - .5885
62	D-398	Own	M,I,R	PC	12-5 x8	W	4	2493	415-1300	398-1300	360-1200	16.00		90.6	32.44	1865-850	11100	14010	VI	2 - .5885
63	D-375	Own	M,I,R	PC	8-5 x8	W	4	1662	350-1300	329-1300	302-1200	16.00		112	31.24	1630-830	8870	11450	VI	2 - .5885
64	D-364	Own	M,I,R	PC	8-5 x8	W	4	1662	275-1300	253-1300	239-1200	16.00		87	39.44	1230-900	8450	11270	VI	2 - .5885
65	Continental GD-157	Own	I,M	TC	4-3 x4	W	4	157	39-2000			15.5				113-1200	605		VI	1.16- .375
66	HD-243	Own	I	TC	4-3 x5	W	4	243	51.7-2000			15				175-1200	940		VI	1.37- .325
67	HD-260	Own	I	TC	4-3 x5	W	4	260	59.3-2000			15				188-1100	940		VI	1.37- .325
68	TD-427	Own	I	TC	6-4 x4	N	4	427	108.5-2000			14.5				310-1300	1300		VI	1.71- .437
69	RD-572	Own	I,M	TC	6-4 x5	D	4	572	142.5-2000			14.5				414-1300	1845		VI	1.87- .546
70	TD-6427	Own	T,B,Tr	TC	6-4 x4	N	4	427	116-2400			14.5				307-1300	1270		VI	1.71- .437
71	RD-6572	Own	T,B,Tr	TC	6-4 x5	D	4	572	162-2400			14.5				423-1300	1785		VI	1.87- .546
72	SD-802	Own	I	PC	8-5 x5	D	4	802	202-1800			14.7				626-1200			VI	2.19- .552
73	SD-6802	Own	T,B	PC	8-5 x5	D	4	802	225-2200			14.7				620-1300			VI	2.19- .552
74	ED-201	Own	I	TC	4-3 x2	W	4	201	46.5-2000			15				145-1100			VI	1.44- .350
75	JD-382	Own	I	TC	4-4 x6	W	4	382	72.5-1600			14.5				270- 900			VI	1.96- .468
76	VD-603	Lanova	I	TC	6-4 x4	N	4	602	175-2900			15.00				468-1200			VI	1.94- .567
77	VD-6603	Lanova	T,B	TC	6-4 x4	N	4	603	185-2900			15.00					1696		VI	1.94- .567

For abbreviations, see pages 258 and 259

For Directory of the Engine Manufacturers listed above, see page 263

MARINE • RAILCAR • INDUSTRIAL ★ ★ ★ ★

VALVES		PISTON					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM								STARTING METHOD		OVERALL DIMENSIONS				
Exhaust Port Diameter and Lift (In.)		Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked In—	Materials (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifice	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Clutch Housing (S.A.E. Number)	Line Number
3.25- .675		CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	5	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Own	A	96				1
3.25- .675		CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	6	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Own	A	112				2
3.25- .675		CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	7	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Own	A	125				3
3.25- .675		CI	13.25	98.0	4	2	3.25-7.62	F	4140	22.25	85.0	7	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Own	A	140				4
3.25- .675		CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	9	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Own	A	156				5
3.25- .675		CI	13.25	98.0	4	2	3.25-7.62	F	4140	22.25	85.0	9	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Own	A	169				6
2.19-		AA			4	2						5	5.75	BS					AM	Win	Own	A-EI	85½	35	69½		7
2.19-		AA			4	2						7	5.75	BS					AM	Win	Own	A-EI	87½	35	69½		8
2.19-		AA			4	2						7	6.75	BS					AM	Win	Own	A-EI	87½	35	69½		9
1.12- .429		AA	4.12	2.36	3	2	1.00-2.75	F	1035	7½	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	E-H	22½	19½	29½(11)	3.2	10
1.12- .429		AA	4.12	2.36	3	2	1.00-2.84	F	1035	7½	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	Ela	39½	19½	28½(12)	3.2	11
1.12- .429		AA	4.46	2.69	3	2	1.00x3.10	F	1035	7½	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	Ela	39½	19½	28½(12)	3.2	12
1.12- .429		AA	4.12	2.36	3	2	1.00-2.84	F	1035	7½	2.62	7	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	Ela	39½	19½	28½(12)	3.2	13
1.18- .466		AA	4.93	3.00	3	2	1.25-2.92	F	1035	9.50	3.41	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DR	Ela	42½	27	35½(12)	3.2	14
1.18- .466		AA	4.93	3.00	3	2	1.25-2.92	F	1035	9.50	3.41	7	3.00	AB	AB	C	Pi	2000		B-P	DR	Ela	84½(11)	27½	34½(12)	2.3	15
1.37- .476		AA	5.25	4.46	3	2	1.50-3.66	F	6140	11.09	4.87	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DR	Ela	48½	25½	37½(12)	2.1	16
1.37- .476		AA	5.25	4.46	3	2	1.50-3.66	F	6140	11.09	4.87	7	3.00	AB	AB	C	Pi	2000		B-P	DR	Ela	61½(11)	26½	36½(12)	2.1	17
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000	Uni	Com	L-D	Ela	58½	23½	46½	1.0	18
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000	Uni	AB	L-D	E-G	58½	25½	46½	1.0	19
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	Uni	P-S	D-N	E-G	86½	38½	62½(12)	00.0	20
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800		P-S	D-N	E-G	114½(11)	37½	62½(12)	00.0	21
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	83½	38½	46½	1.0	22
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	58½	32½	46½	1.0	23
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	89½	36½	45½	1.0	24
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	73	30½	46½	1.0	25
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	101½	36½	46½	1.0	26
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	83½	32½	46½	1.0	27
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	101½	36½	46½	1.0	28
1.87- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	5	3.75	AB	AB	C	Pi	2000	Com	Com	DR	Ela	44½	30½	48½	1.0	29
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800		Pur	LB	E-G	86½	48	63½	00.0	30
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800		Pur	LB	E-G	129½	48	72½	00.0	31
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	9	4.69	AB	AB	C	Pi	1800	Den	Pur	LN	AEG	109½	47½	74½	00.0	32
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	9	4.69	AB	AB	C	Pi	1800	Den	Pur	LN	AEG	112½	47½	74½	00.0	33
1.22- .438		AA	4.13	2.75	3	2	1.00-2.75	F	1040	7.38	3.00	7	2.50	AB	AB	C	Pi	2000	Uni	Cb	DR	Ela	39½	22½	29½(4)		34
1.44- .474		AA	5.75	4.70	3	2	1.50-3.81	F	1040	11.00	6.25	7	3.50	AB	AB	C	Pi	2000	Den	C-F	DR	Ela	47½	30½	34½(7)	2	35
1.12- .429		AA	4.12	2.36	3	2	1.00-2.75	F	1035	7.38	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	E-H	22½	19½		3.2	36
1.12- .429		AA	4.12	2.36	3	2	1.00-2.84	F	1035	7.38	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	Ela	39½	19½	28½(12)	3.2	37
1.12- .429		AA	4.46	2.69	3	2	1.00-3.10	F	1035	7.38	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	Ela	39½	19½	28½(12)	3.2	38
1.12- .429		AA	4.12	2.36	3	2	1.00-2.84	F	1035	7.38	2.62	7	2.50	AB	AB	C	Pi	2000	Uni	Com	AL	Ela	39½	19½	28½(12)	3.2	39
1.22- .474		AA	4.13	2.75	3	2	1.00-2.75	F	1040	7.38	3.00	7	2.50	AB	AB	C	Pi	2000	Uni	Cb	DR	Ela	39½	22½	29½(4)		40
1.18- .466		AA	4.93	3.00	3	2	1.25-2.92	F	1035	9.50	3.41	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DR	Ela	42½	27	35½(12)	3.2	41
1.37- .476		AA	5.25	4.46	3	2	1.50-3.66	F	6140	11.09	4.87	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DR	Ela	48½	25½	37½(12)	2.1	42
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000	Uni	Com	L-D	Ela	58½	29½	46½	1.0	43
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000	Uni	AB	L-D	E-G	58½	29½	46½	1.0	44
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	89½	32½	46½	1.0	45
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	73	30½	46½	1.0	46
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	83½	32½	46½	1.0	47
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	E-G	101½	36½	46½	1.0	48
1.81- .540		AA	6.75	6.70	3	2	1.25-4.50	F	1040	12.50	10.62	9	3.99	AB	AB	C	Pi	2000		AB	L-D	Ela	101½	36½			49
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	Uni	P-S	D-N	E-G	86½	38½	62½(12)	00.0	49
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800		Pur	LB	E-G	86½	48	63½	00.0	50
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	9	4.69	AB	AB	C	Pi	1800	Den	Pur	LN	AEG	109½	47½	74½	00.0	51
2.16- .667		AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	9	4.69	AB	AB	C	Pi	1800	Den	Pur	LN	AEG	112½	47½	74½	00.0	52
1.81- .540		AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.99	AB	AB	C	Pi	2000		AB	L-D	Ela	58½	29½			53
1½- .423		AA	5.53		3	2	1.62-3.23	F	1040	10.25		5	2.75	Own	Own	C	Si	750	Den	Own	Own	E-G	56½	27½	50½	2*	64
1½- .434		AA	6.16		3	2	1.81-3.73	F	1040	10.25		5	3.50	Own	Own	C	Si	750	Den	Own	Own	E-G	59½	29	49½	1*	65
1½- .434		AA	6.16		3	2	1.81-3.73	F	1040	10.25		7	3.50	Own	Own	C	Si	750	Den	Own	Own	E-G	76½	31½	66½	1*	66
1½- .466		AA	6.38		3	2	2.00-4.17	F	1040	11.00		7	4.25	Own	Own	C	Si	750	Den	Own	Own	E-G	71½	35½	61½	1	67
1½- .466		AA	6.38		3	2	2.00-4.17	F	1040	11.00		7	4.25	Own	Own	C	Si	750	Den	Own	Own	AEG	77½	37½	64½	0	68
2½- .466		AA	8.19		3	1	2.37-4.73	F	1040	15.00		5	3.75	Own	Own	C	Si	1750	Den	Own	Own	AEG	87½	38	66½	0*	69
2½- .466		AA	8.19		3	1	2.37-4.73	F	1040	15.00		7	3.75	Own	Own	C	Si	1750	Den	Own	Own	AEG	88	43½	67½	0*	70
2½- .5885		AA	8.19		3	1	2.38-4.73	F	1040	16.00		7	5.50	Own	Own	C	Si	750	Den	Own	O-D	AEG	107½	54½	79½	00	61
2½- .5885		AA	8.19		3	1	2.38-4.73	F	1040	16.00		7	5.50	Own	Own	C	Si	750	Den	Own	O-D	AEG	103½	54½	79½	00	62
2½- .5885		AA	8.19		3	1	2.38-4.73	F	1040	16.00		8	5.50	Own	Own	C	Si	750	Den	Own	O-D	AEG	82½	54½	79½	00	63
2½- .5885		AA	8.19		3	1	2.38-4.73	F	1040	16.00		8	5.50	Own	Own	C	Si	750	Den	Own	O-D	AEG	83½	54½	79½	00	64
1.06- .375		AA	3.75		3	1	1.12-	F	1035	7.00		3	2.37	BR	AB		Pi	1850	Opt	Opt		Ela	31½	19½	30½		65
1.25- .328		AA	4.31		3	2	1.25-	F	1035	9.50		3	2.87	BR	AB		Pi	1850	Opt	Opt		Ela	33½	21½	36		66
1.25- .328		AA	4.31		3	2	1.25-	F	1035	9.90		3	2.87	BR	AB		Pi	1850	Opt	Opt		Ela	33½	21½	36		67
1.50- .437		AA	4.68		3	2	1.43-	F	1035	8.37		7	2.87	AB	AB		Pi	1850	Opt	Opt		Ela	47½	27½	37½	Opt	68
1.69- .546		AA	5.93		3	2	1.50-	F	1035	10.90		7	3.25	AB	AB		Pi	1850	Opt	Opt		Ela	61½	31½	44½	Opt	69
1.50- .437		AA	4.68		3	2	1.25-	F	1035	8.37		7	2.87	AB	AB		Pi	1850	Opt	Opt		Ela	41½	28½	34½	Opt	70
1.69- .546		AA	5.93		3	2	1.50-	F	1035	10.90		7	3.25	AB	AB		Pi	1850	Opt	Opt		Ela	61½	27½	37½	Opt	71
1.91- .562		Alu	6.06		3	2	1.75-4.22	F	6640	10.50		7	3.75	AB	AB		Pi	1850	Opt	Opt		Ela	53½	30½	48½		72
1.91- .522		Alu	6.06		3	2	1.75-4.22	F	6640	10.50		7	3.75	AB	AB		Pi	1850	Opt	Opt		Ela	53½	30½	48½	Opt	73
1.19- .390		Alu	4.06		3	1	1.10-3.06	F	6636	8.38		3	2.62	AB	AB		Pi	1850	Opt	FB	AL	Ela					74
1.30- .405		Alu	5.94		3	2	1.49-3.71	F	1035	10.00		3	3.25	AB	AB		Pi	1850	AM	FB	AL	Ela					75
1.63- .567		Alu	5.44	6.19	3	2	1.10-3.97	F	6637	8.38	4.68	5	3.50	RM			Pi	1900		ZFB	DR	Ela					76
1.63- .567		Alu	5.44	6.19	3	2	1.50-3.97	F	6637	9.38	4.68	5	3.50	RM			Pi	1900		ZFB	DR	Ela	43½	34	48½		77

For abbreviations, see pages 258 and 259

For Directory of the Engine Manufacturers listed above, see page 263

1955 AUTOMOTIVE DIESEL

Line Number	Engine Make and Model	Built Under License from	Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.)	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	Valves: Arrangement	Valves: Intake Port Diameter and Lift (In.)
1	Cummins H-600	Own	T,S,Tr,M,R,I	DI	6-4½x6	W	4	672	150-1800	125-1800	102-1800	17.00	....	72	23.54	500- 900	2593	2690	VI	1.75-.500
2	NH-600	Own	T,S,Tr,M,R,I	DI	6-5½x6	W	4	743	200-2100	174-2100	139-1800	15.50	....	76	19.24	535-1400	2690	2825	VI	1.86-.420
3	*NHS-600	Own	T,S,Tr,M,R,I	DI	6-5½x6	W	4	743	275-2100	240-2100	175-1800	13.50	....	161	15.86	710-1800	2975	3155	VI	1.86-.420
4	HR-600	Own	T,S,Tr,M,R,I	DI	6-5½x6	W	4	743	165-1800	141-1800	115-1800	15.50	....	71	20.94	540-1000	2800	2895	VI	1.75-.500
5	HR-400	Own	T,S,Tr,M,R,I	DI	4-5½x6	W	4	496	110-1800	94-1800	71-1800	15.50	....	71	25.94	360-1050	1810	1915	VI	1.75-.500
6	*HRS-600	Own	T,S,Tr,R,I	DI	6-5½x6	W	4	743	225-1800	191-1800	157-1800	13.50	....	95	16.44	695-1000	2780	2930	VI	1.75-.500
7	*NHRS-600	Own	T,S,Tr,M,R,I	DI	6-5½x6	W	4	743	300-2100	255-2100	186-1800	12.00	....	111	15.04	800-1400	2823	3155	VI	1.92-.420
8	NVH-1200	Own	T,Tr,M,R,I	DI	12-5½x6	W	4	1486	400-2100	350-2100	262-1800	15.50	....	78	21.04	1075-1200	5500	5650	VI	1.55-.420
9	*NVHS-1200	Own	T,Tr,M,R,I	DI	12-5½x6	W	4	1486	550-2100	480-2100	350-1800	13.50	....	103	14.34	1420-1800	5000	5700	VI	1.55-.420
10	JBS-600	Own	T,S	DI	6-4½x5	W	4	401	150-2500	140-2200	123-2200	15.00	....	....	12.54	340-1400	1745	1990	VI	1.38-.500
11	HRBB-600	Own	T,S,Tr,R,I	DI	6-5½x6	W	4	743	180-2000	148-2000	113-1800	15.50	....	67	23.44	505-1100	2850	....	VI	1.94-.500
12	(1)NHH-600	Own	S,R,T	DI	6-5½x6	W	4	743	200-2100	174-2100	139-1800	15.50	....	77	17.54	535-1300	2265	....	VI	1.86-.420
13	LR-600	Own	M,R,I	DI	6-7½x10	W	4	2477	....	309-1100	225-1000	13.50	....	72	34.94	1650- 850	7790	9800	VI	2.75-.718
14	*VT-12	Own	M,I	DI	12-5½x6	W	4	1486	600-2100	450-1800	400-1800	13.50	....	....	15.54	....	6270	6289	VI	1.86-.420
15	(1)NHHS-600	Own	T,S,R	DI	6-5½x6	W	4	743	275-2100	240-2100	175-1800	13.50	....	101	15.94	710-1800	2775	....	VI	1.56-.420
16	JT-6	Own	T,S,M,I	DI	6-4½x5	W	4	401	165-2500	....	....	15.50	....	....	....	365-1700	1815	....	VI	1.16-....
17	NT-6	Own	T,S,Tr,M,I	DI	6-5½x6	W	4	743	235-2100	....	....	15.50	....	....	....	657-1450	....	....	VI	1.56-.420
18	NRT-6	Own	T,S,Tr,M,I	DI	6-5½x6	W	4	743	300-2100	....	....	12.10	....	....	....	806-1500	....	....	VI	1.56-....
19	Goutzit	FBL-514	Own	T,S	6-4½x5½	N	4	437	....	125-2300	....	17.80	....	....	....	325-1400	1430	....	VI	1.75-....
20		FBL-614	Own	T,S	6-4½x5½	N	4	649	....	179-2300	....	17.80	....	....	....	434-1400	1874	....	VI	1.75-....
21	Fagnol-Leyland	680	Leyland	T,S,Tr,M,R,I	DI	6-4.8x5½	D	4	597	160-2225	....	....	15.75	1000	....	....	455-1200	1625	1625	VI	1.50-.500
22		680	Leyland	T,S,Tr,M,R,I	DI	6-5x5¾	D	4	677	180-2225	....	....	15.75	1000	....	....	504-1100	1625	1625	VI	2.80-.500
	Fairbanks-Morse																				
23		49B3½	....	M,I	PC	1-3½x4	W	4	30.7	....	6.5-1900	5.25-1900	16.00	950	80	.8	19	....	433	VI	1.25-....
24		49B4½	....	M,I	PC	1-4½x4½	W	4	60.1	....	13.2-1800	10.5-1800	16.00	850	80	6.1	30	....	650	VI	....
25		48A3	....	M,I	PC	1-3x4	....	4	28.0	5.4-1900	4.8-1900	3.5-1900	18.00	850	85	12.1	11-1500	....	425	VI	1.09-.298
26		48A4½	....	I	PC	1-4½x5	W	4	71	16-2000	12-1800	11-1800	18.00	825	62	....	55-1000	....	....	VI	1.37-.313
27		48A4½	....	M,I	PC	2-4½x5	W	4	142	33-2000	25-1900	22-1800	18.00	825	68	69.1	100-1200	....	1500	VI	1.37-.313
28		48A4½	....	M,I	PC	3-4½x5	W	4	213	50-2000	38-1800	34-1800	18.00	825	69	51.4	161-2000	....	1750	VI	1.37-.313
29		48A4½	....	M,I	PC	6-4½x5	W	4	426	100-2000	75-1800	67-1800	18.00	825	70	33.2	325-1200	....	2230	VI	1.37-.313
30		49A4½	....	M,I	DI	2-4½x5½	W	2	174	66-1800	53-1400	66-1800	16.00	1200	73	23.3	210- 800	....	1350	VI	....
31		49A4½	....	M,I	DI	3-4½x5½	W	2	262	102.5-1800	80-1400	90-1800	16.00	1200	76	18.9	315- 800	....	1700	VI	....
32		49A4½	....	M,I	DI	4-4½x5½	W	2	350	144-1800	105-1400	127-1800	16.00	1200	80	15.7	440- 800	....	2000	VI	....
33		49A4½	....	M,I	DI	6-4½x5½	W	2	525	205-1800	158-1400	189-1800	16.00	1200	78	14.2	630- 800	....	2550	VI	....
34		48A4	....	I	PC	1-4x5	W	4	63	....	11-1900	8-1200	18.00	....	64	....	45-	....	....	VI	....
35		48A4	....	M,I	PC	2-4x5	W	4	126	....	23-1900	16-1200	18.00	....	64	101.2	90-	....	1620	VI	....
36		48A4	....	M,I	PC	3-4x5	W	4	189	....	34-1900	25-1200	18.00	....	67	78.6	140-	....	1965	VI	....
37		48A4	....	M,I	PC	6-4x5	W	4	377	....	68-1900	50-1200	18.00	....	67	42.5	280-	....	2365	VI	....
38		48AS3½	....	I	PC	2-3½x4	....	4	76.8	20.3-2000	16-1800	13.5-1800	18.00	....	76	40.7	....	550	....	VI	....
39	General Motors	4-51	Own	I,Tr	DI	4-4.1x4.1	D	2	217	....	85-2300*	66-2250*	18.00	1300	80	19.6	169-1600	1180	....	....	No Valves
40		4-51	Own	T	DI	4-4.1x4.1	D	2	217	....	100-3000*	....	18.00	1300	....	....	....	1035	....	....	No Valves
41		2-71	Own	Tr,I	DI	2-4½x5	D	2	142	....	55-2000*	48-1800*	17.00	1225	74	20.0	184-1400	960	....	VI	No Valves
42		3-71	Own	I,Tr	DI	3-4½x5	D	2	213	....	102-2100*	75-1800*	17.00	1225	77	21.4	277-1400	1605	....	VI	No Valves
43		3-71	Own	T	DI	3-4½x5	D	2	213	....	110-2100*	....	17.00	1225	....	....	....	1370	....	VI	No Valves
44		4-71	Own	I,Tr	DI	4-4½x5	D	2	284	....	143-2100*	101-1900*	17.00	1225	76	17.5	375-1600	1770	....	VI	No Valves
45		6-71	Own	S,T	DI	4-4½x5	D	2	284	....	150-2300*	....	17.00	1225	....	....	....	1570	....	VI	No Valves
46		6-71	Own	I,Tr	DI	6-4½x5	D	2	426	....	219-2100*	154-1900*	17.00	1225	80	14.3	574-1600	2210	....	VI	No Valves
47		6-71	Own	S,T	DI	6-4½x5	D	2	426	....	230-2300*	....	17.00	1225	....	....	....	1975	....	VI	No Valves
48		6-110	Own	Tr,I	DI	6-5x5.6	D	2	660	....	300-2000*	230-1800*	18.00	1250	77	12.9	849-1400	2960	....	VI	No Valves
49		Twin 4-71	Own	I	DI	8-4½x5	D	2	568	....	286-2100*	202-1900*	17.00	1225	78	23.9	1310-9155lb	4620	....	VI	No Valves
50		Twin 6-71	Own	I	DI	12-4½x5	D	2	851	....	437-2100*	309-1900*	17.00	1225	80	18.2	2010-9155lb	9620	....	VI	No Valves
51		Twin 6-110	Own	I	DI	12-5x5.6	D	2	1320	....	600-2000*	460-1800*	18.00	1250	77	24.8	2975-8005lb	11440	....	VI	No Valves
52		Quad 6-71	Own	I	DI	24-4½x5	D	2	1702	....	874-2000*	617-1800*	17.00	1225	80	20.2	4020-9155lb	12425	....	VI	No Valves
53	Gray Marine	Four-D157	....	M	TC	4-3½x4½	W	4	157	....	....	30-1900	15.00	....	84	38.2	108-1800	....	1100	VI	1.18-.273
54		Four-D260	....	M	TC	4-3½x5½	W	4	260	....	....	50-1800	15.00	....	85	27.2	167-1200	....	1400	VI	1.37-.248
55		Six-D427	Lanova	M	TC	6-4½x4½	N	4	427	....	....	100-2200	14.40	....	85	14.6	250-2200	....	1475	VI	1.72-.440
56		Six-D572	....	M	TC	6-4½x5½	D	4	572	....	....	135-2200	15.00	....	85	18.5	401-1600	....	2510	VI	1.87-.546
57		Six-D662	....	M	....	....	....	....	662	....	....	250-2200	....	....	90	14.0	....	....	2800	....	....
58	Hallett	AC1	Own	Tr,I	PC	1-3½x3½	N	4	35	6.5-2000	5.5-1800	5-1800	21.50	1000	80	37.0	21-1800	185	....	VI	1.25-.315
59		DI-A	Own	I,M	PC	1-3½x4½	N	4	58	10-1800	10-1800	9-1800	21.60	1000	84	58.24	32-1800	450	625	VI	1.62-.313
60		D2	Own	I,M	PC	2-3½x4½	N	4	100	22.5-1800	20-1800	16-1800	21.60	1000	97	33.04	64-1800	980	780	VI	1.62-.315
61		AC2	Own	I,M,Tr	PC	2-3½x3½	N	....	72.2	18.5-2200	18-2200	13-1800	20.00	985	82	30.76	42-1800	450	475	VI	1.25-.315
62		WC2	Own	I,M,Tr	PC	2-3½x3½	N	....	72.2	18.5-2250	18-2250	13-1800	20.00	985	82	31.94	42-1800	450	825	VI	1.25-.315
63	Hercules	DIX-83	....	Tr,M,I	DI	2-3½x4	D	4	83	24-2200	20-2200	20-2200	18.50	825	87	20.0	60-1500	400	....	VI	1.56-.350
64		DIXC	Own	Tr,M,I	TC	2-4x4½	D	4	113	27-1800	23-1800	23-1800	15.50	750	92	23.9	81-1400	880	....	VI	1.62-.375
65		DIXD	Own	Tr,M,I	TC	2-4½x4½	D	4	127	30-1800	26-1800	26-1800	15.50	750	88	21.6	91-1300	880	....	VI	1.62-.375
66		DIX4B	Own	T,S,Tr,M,R,I	TC	4-3½x4	D	4	133	40-3000	29-2600	33-2800	15.50	825	90	18.3	96-1800	900	....	VI	1.37-.350
67		DIX4D	Own	T,S,Tr,M,R,I	TC	4-3½x4	D	4	166	57-3000	49-2600	41-2200	15.50	825	90	14.0	126-1500	900	....	VI	1.56-.350
68		DOOD	Own	T,Tr,M,I,B	TC	4-3½x4½	D	4	199	68-3000	59-2600	51-2200	15.50	750	91	15.9	142-1400	730	....	VI	1.62-.375
69		DOOC	Own	T,Tr,M,I,B	TC	4-4x4½	D	4	226	78-3000	68-2600	47-1800	15.50	750	91	15.9	162-1400	730	....	VI	1.62-.375
70		DOOD	Own	T,Tr,M,I,B	TC	4-4½x4½	D	4	254	78-3000	68-2600	53-1800	15.50	750	91	14.2	182-1400	730	....	VI	1.62-.375
71		DIX6D	Own	Tr,M,B,R,T,I	TC	6-3½x4	D	4	249	93-3000	79-2600	67-2200	15.50	825	96	12.0	186-1000	800	....	VI	1.56-.350
72		DIX6-272	....	T,S,Tr,M,R,I	DT	6-3½x4	D	4	272	102.5-3000	87-3000	73-2200	15.50	825	96	11.1	204-1000	800	....	VI	1.56-.350
73		DJXB	Own	T,S,Tr,M,R,I	TC	6-3½x4½	D	4	299	77-2600	66-2600	51-1800	15.50	750	87	18.0	179-1300	980	....	VI	1.62-.375
74		DJXC	Own	T,S,Tr,M,R,I	TC	6-3½x4½	D	4	299	83-2600	71-2600	56-1800	15.50	750	87	16.1	200-1300	950	....	VI	1.62-.375
75		DJXH	Own	T,S,Tr,M,I	TC	6-3½x4½	D	4	299	99-2600	84-2600	67-1800	15.50	750	95	14.2	234-1400	980	....	VI	1.75-.375

For abbreviations, see pages 258 and 259

For Directory of the Engine Manufacturers listed above, see page 263

ENGINES—*continued*

VALVES		PISTON					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM							STARTING METHOD		OVERALL DIMENSIONS				
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in—	Materials (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifices	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Clutch Housing (S.A.E. Numbers)	Line Number
1.75-.500	CI	6.25	10.56	3	2	1.99-4.09	F	.....	12.00	10½	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	57 7/8 (2)	29½	47 11/16 (3)	2,1,0	1
1.56-.420	Alu	6.25	6.75	3	1	1.99-4.34	F	.....	12.00	10½	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	61 7/8 (2)	28½	48 5/8	2,1,0	2
1.56-.420	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	10½	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	60 7/8 (2)	32½	48 11/16 (3)	1,0	3
1.75-.500	Alu	6.25	6.75	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	57 7/8 (2)	27½	47 11/16 (3)	2,1,0	4
1.75-.500	CI	6.25	10.5	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	43 7/8	28½	47 11/16 (3)	2,1	5
1.75-.500	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	60 11/16	30 5/8	47 11/16 (3)	1,0	6
1.56-.420	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	60 7/8	32½	48 11/16	1,0	7
1.56-.420	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	.....	7	5.00	Own	N	....	Mu	....	Don	Pur	L-D	Ele	73	41	57 (3)	0,00	8
1.38-.500	Alu	4.75	.....	3	1	1.50-3.37	F	.....	9.50	6.60	7	3.88	Own	N	....	Mu	....	Don	Pur	L-D	Ele	73	42	57 (3)	0,00	9
1.94-.500	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	48 11/16	24 11/16	40 5/8 (3)	2,1	10
1.56-.420	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	61 7/8	27 5/8	47 11/16 (3)	2,1,0	11
2.75-.718	Alu	10.56	.....	3	2	2.88-6.00	F	.....	16.00	.....	7	5.50	Own	N	....	Mu	....	Don	Com	DR	Ele	66 5/8	36 5/8	44 7/16	1	12
1.56-.420	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	.....	7	5.00	Own	N	....	Mu	....	Don	Pur	L-D	A-EI	66	44 5/8	58 5/8	0,00	13
1.56-.420	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	.....	7	5.00	Own	N	....	Mu	....	Don	Pur	L-D	Ele	73	41	57		14
1.56-.420	Alu	6.25	6.65	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	Don	Com	L-D	Ele	63 11/16	58 5/8	22 5/8		15
1.16-.....	Alu	4.94	4.43	2	1	1.50-3.37	F	.....	9.50	6.60	7	3.88	Own	N	....	Mu	....	P-V	Pur	L-D	Ele	47	27 7/8	43 5/8		16
1.56-.426	Alu	6.75	6.75	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	P-V	Pur	L-D	Ele	61 7/8	28 11/16	57 1/8		17
1.56-.....	Alu	6.75	6.65	3	1	1.99-4.34	F	.....	12.00	10.50	7	4.50	Own	N	....	Mu	....	P-V	Pur	L-D	Ele	60 7/8	28 11/16	57 1/8		18
1.625-.....	Alu	6.00	.....	3	2	1.57-3.62	F	.....	10.82	.....	7	3.00	BO	BO	C	Pi	1775	Mann	BO	BO	Ele	53.93	34.06	49.23		19
1.625-.....	Alu	6.00	.....	3	2	1.57-3.62	F	.....	10.82	.....	6	3.54	BO	BO	C	Pi	1775	Mann	BO	BO	Ele	46.46	47.78	37.52		20
1.60-.500	AA	6.60	7.21	3	2	1.63-4.20	F	EN16S	10.50	7.38	7	3.50	CBR	Own	C	Mu	2100	Opt	Opt	L-D	Ele	52 1/4	28 5/8	40	1,2,3	21
1.70-.500	AA	6.60	7.38	3	2	1.63-4.40	F	EN16S	10.50	7.38	7	3.50	CBR	Own	C	Mu	2100	Opt	Opt	L-D	Ele	52 1/4	28 5/8	40	1,2,3	22
1.00-.....	Alu	.....	.....	3	1	.....	F	.....	.....	.....	2	2.00	Dem	Dem	C	Pi	1750	AC	AC	AL	E-H	18	.....	21 1/16	..	23
	Alu	.....	.....	3	1	.....	F	.....	.....	.....	2	2.50	Dem	Dem	C	Pi	1750	AC	AC	AL	E-H	30	.....	34	..	24
1.09-.209	CI	3.81	2.26	3	2	1.06-2.50	F	1035	8.00	1.65	2	2.00	Own	Own	O	Si	.....	AM	AC	AL	E-H	18 1/16	20 5/8	26 1/2	.....	25
1.37-.313	CI	5.40	6.20	3	2	1.56-4.00	F	1035	10.87	6.60	2	2.75	Own	Own	O	Si	.....	AM	Fra	AL	Opt	23	23	38	.....	26
1.37-.313	CI	5.93	6.20	3	2	1.56-4.00	F	1035	10.87	6.60	3	2.75	Own	Own	O	Si	.....	AM	Fra	AL	Opt	30	23	38	.....	27
1.37-.313	CI	5.31	6.20	3	2	1.56-4.00	F	1035	10.87	6.60	4	2.75	Own	Own	O	Si	.....	AM	Fra	AL	Ele	35	23	38	.....	28
1.37-.313	CI	5.46	6.20	3	2	1.56-4.00	F	1035	10.87	6.60	7	3.16	Own	Own	O	Si	.....	AM	Fra	AL	Ele	50	24	40	.....	29
2.38-.520	Alu	6.38	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	3	4.00	RM	AB	C	Si	2200	Don	Com	AL	Ele	32 1/16	28 1/16	40 7/16	1	30
2.38-.520	Alu	6.38	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	4	4.00	RM	AB	C	Si	2200	Don	Com	AL	Ele	38 1/16	28 1/16	40 7/16	1	31
2.38-.520	Alu	6.38	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	5	4.00	RM	AB	C	Si	2200	Don	Com	AL	Ele	45 1/16	28 1/16	40 7/16	1	32
2.38-.520	Alu	6.38	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	7	4.00	RM	AB	C	Si	2200	Don	Com	AL	Ele	59 1/16	28 1/16	40 7/16	1	33
.....	CI	.....	.....	3	2	.....	F	1035	.....	.....	2	2.75	Own	Own	C	Si	2300	AM	Fra	AL	E-H	30 1/16	24	40	.....	34
.....	CI	.....	.....	3	2	.....	F	1035	.....	.....	3	2.75	Own	Own	C	Si	2300	AM	Fra	AL	E-H	44 1/16	28	45	.....	35
.....	CI	.....	.....	3	2	.....	F	1035	.....	.....	4	2.75	Own	Own	C	Si	2300	AM	Fra	AL	E-H	64	30	46 1/2	.....	36
.....	CI	.....	.....	3	2	.....	F	1035	.....	.....	7	3.16	Own	Own	C	Si	2300	AM	Fra	AL	Ele	69 1/2	30	46 1/2	.....	37
.....	CI	.....	.....	.....	.....	.....	F	.....	.....	.....	3	2.88	Own	Own	O	Si	.....	AM	Fra	AL	E-H	33	22	31	.....	38
No Valves	AT	5.06	6.10	4	2	1.38-3.37	F	1141A	8.40	3.93	5	3.62	Own	Own	C	Mu	350	Don	Com	DR	Ele	36 11/16	25 11/16	33 5/8	2	39
No Valves	AT	5.06	6.10	4	2	1.38-3.37	F	1141A	8.40	3.93	5	3.62	Own	Own	C	Mu	350	Don	Com	DR	Ele	38 11/16	25 11/16	33 5/8	2	40
1.58-.375	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	3	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	31	28 1/16	40 5/8	2	41
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	4	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	36 1/16	29 1/16	41 11/16	2	42
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	4	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	.....	.....	.....	2	43
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	5	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	42 5/16	29 1/16	41 11/16	2	44
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	5	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	.....	.....	.....	2	45
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	7	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	53 11/16	31 11/16	42 11/16	1	46
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	7	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	.....	.....	.....	1	47
1.93-.454	AT	6.50	11.00	4	2	1.63-4.34	F	1141A	10.60	7.36	7	4.00	Own	Own	C	Mu	450	Don	Com	DR	Ele	70 7/8	31 5/16	49 5/8	1 5/8	48
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	10	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	74 7/8	36	57 11/16		49
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	14	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	86 11/16	36	57 11/16		50
1.93-.454	AT	6.50	11.00	4	2	1.63-4.34	F	1141A	10.60	7.36	14	4.00	Own	Own	C	Mu	450	Don	Com	DR	Ele	123 1/16	60	57 11/16		51
1.58-.394	AT	6.16	7.83	4	2	1.50-3.62	F	1141A	10.12	6.14	28	3.50	Own	Own	C	Mu	450	Don	Com	DR	Ele	161 1/16	67 7/8	69 5/16		52
1.09-.272	AA	3.75	.....	3	2	1.12-2.75	F	1035	7.00	.....	3	2.47	AB	AB	....	Pi	1800	Own	ACB	AL	Ele	50	29 1/16	36 11/16	3	53
1.25-.248	AA	4.31	.....	3	2	1.25-3.31	F	1035	9.50	.....	3	2.87	AB	AB	....	Pi	1800	Own	ACB	AL	Ele	55	21 5/16	34	3	54
1.50-.440	AA	4.68	.....	3	2	1.43-3.62	F	.....	8.37	.....	7	2.87	AB	AB	....	Pi	1800	Own	Pur	DR	Ele	67	28	37	3	55
1.66-.548	AA	6.00	.....	3	2	1.88-4.00	F	1035	10.50	4.72	5	3.37	AB	AB	....	Pi	1800	Own	Fra	DA	Ele	7..	28	40 5/8	1	56
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	76	.....	.....	.....	57
1.25-.315	AA	.....	2.25	4	1	1.31-2.99	F	4140	7.00	2.75	2	....	AB	AB	....	Pi	1900	AM	Pur	AL	Ele	23 1/16	16	25 5/16	.....	58
1.62-.313	Alu	5.25	4.00	4	1	1.37-3.49	F	1045	9.00	4.67	2	....	AB	AB	....	Pi	1800	AM	Pur	AL	Ele	28	24	30 5/8	.....	59
1.62-.315	Alu	5.25	4.00	4	1	1.37-3.49	F	1045	9.00	4.67	2	....	AB	AB	....	Pi	1800	AM	Com	AL	Ele	32 1/16	23	30	.....	60
1.25-.315	AA	3.88	2.25	4	1	1.31-2.96	F	4140	7.00	2.75	2	....	AB	AB	....	Pi	1900	AM	Pur	AL	E-H	33	25	26	.....	61
1.25-.315	AA	3.88	2.25	4	1	1.31-2.96	F	4140	7.00	2.75	2	....	AB	AB	....	Pi	1900	AM	Pur	AL	Ele	33	25	26	.....	62
1.12-.380	Alu	4.63	3.20	3	2	1.13-2.87	F	CNM	7.75	4.20	3	2.75	AB	AB	C	Pi	1650	.....	.....	LDA	A-EI	19 1/16	21 11/16	30 5/8	.....	63
1.12-.375	Alu	4.84	4.00	4	2	1.18-3.48	F	CNM	8.00	5.31	2	3.81	AB	AB	C	Pi	1450	.....	.....	DR	EAH	23 1/16 (2)	19 5/16	30 5/8	2	64
1.12-.375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	2	3.81	AB	AB	C	Pi	1450	.....	.....	DR	EAH	23 1/16 (2)	19 5/16	30 5/8	2	65
1.12-.380	Alu	4.63	3.20	3	2	1.12-2.82	F	CNM	7.75	4.20	5	2.75	AB	AB	C	Pi	1650	.....	.....	LDA	AEL	29 11/16 (2)	21 11/16	30 5/8	2,4	66
1.12-.380	Alu	4.63	3.20	3	2	1.12-2.87	F	CNM	7.75	4.20	5	2.75	AB	AB	C	Pi	1650	.....	.....	LDA	AEL	29 11/16 (2)	21 11/16	30 5/8	2,4	67
1.12-.375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	32 1/16 (2)	22 1/16 (2)	38	1,5	68
1.12-.375	Alu	4.84	4.06	4	2	1.18-3.45	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	32 1/16 (2)	22 1/16 (2)	38	1,5	69
1.12-.375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	32 1/16 (2)	22 1/16 (2)	38	1,5	70
1.12-.380	Alu	4.63	3.20	3	2	1.12-2.87	F	CNM	7.75	4.20	7	2.75	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	30 1/16 (2)	23 1/16 (2)	37 11/16	2,4	71
1.12-.380	Alu	4.63	3.50	3	2	1.12-3.00	F	CNM	7.75	4.20	7	2.75	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	30 1/16	23 1/16	37 11/16		72
1.12-.375	Alu	4.84	3.12	4	2	1.18-2.95	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	30 (2)	22 1/16	32 5/16	1,3	73
1.12-.375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	30 (2)	22 1/16	32 5/16	1,3	74
1.31-.375	Alu	4.84	3.56	3	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	.....	.....	LDA	AEG	30 (2)	22 1/16	34 9/16	1,3	75

For abbreviations, see pages 258 and 259

For Directory of the Engine Manufacturers listed above, see page 263

1955 AUTOMOTIVE DIESEL

Line Number	ENGINE MAKE AND MODEL	Built Under License from	Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.)	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	VALVES: Arrangement	VALVES: Intake Port Diameter and Lift (In.)
	Hercules—Cont'd																			
1	DJXHF		T,B,M,R	DI	6-3⅝x4½	D	4	299	99-2600	84-2600	67-1800	15.50	750	99	14.1	234-1400	980	.....	VI	1.75-.375
2	DWXC	Own	T,B,Tr,M,R,I	TC	6-4x4½	D	4	356	120-2600	102-2600	86-1800	15.50	750	98	16.9	294-1800	1350	.....	VI	1.98-.395
3	DWXD	Own	T,B,Tr,M,R,I	TC	6-4¼x4½	D	4	404	135-2600	115-2600	91-1400	15.50	750	98	14.8	320-1800	1350	.....	VI	1.98-.395
4	DWXLD	Own	T,B,Tr,M,R,I	TC	6-4¼x5	D	4	426	142-2600	121-2600	96-1800	15.50	750	98	14.2	333-1800	1350	.....	VI	1.98-.395
5	DWXLDF	Own	B,M,R	TC	6-4¼x5	D	4	426	142-2600	121-2600	96-1800	15.50	750	93	14.7	319-1400	1325	.....	VI	1.98-.395
6	DRXB	Own	T,B,Tr,M,R,I	TC	6-4½x5¼	D	4	474	134-2200	114-2200	90-1600	15.00	750	95	17.8	358-1200	1600	.....	VI	2.00-.395
7	DRX-901		B	DT	6-4½x5¼	D	4	501	139-2200	118-2200	96-1600	15.00	750	95	16.7	386-1500	1600	.....	VI	2.00-.395
8	DRXC	Own	T,B,Tr,M,R,I	TC	6-4½x5¼	D	4	529	147-2200	125-2200	100-1600	15.00	750	95	16.0	395-1200	1600	.....	VI	2.00-.395
9	DFXB	Own	T,B,M,Tr,I	TC	6-5x6	D	4	707	190-2100	162-2100	136-1600	14.80	750	95	18.4	530-1350	2500	.....	VI	2.37-.500
10	DFXC	Own	T,B,M,Tr,I	TC	6-5¼x6	D	4	779	204-2100	173-2100	145-1600	14.80	750	95	16.8	585-1350	2500	.....	VI	2.37-.500
11	DFXD	Own	T,B,M,Tr,I	TC	6-5½x6	D	4	856	217-2100	184-2100	162-1600	14.80	750	94	18.4	645-1200	2500	.....	VI	2.37-.500
12	DFXE	Own	T,B,Tr,M,R,I	TC	6-5½x6	D	4	895	229-2100	194-2100	170-1600	14.80	750	94	14.7	660-1200	2500	.....	VI	2.37-.500
13	DFXETS		T,B,Tr,M,R,I	DI	6-5½x6	D	4	895	218-2000	200-2000	216-1600	14.80	750	120	13.7	846-1800	3000	.....	VI	2.81-.500
14	DFXH	Own	T,B,Tr,M,R,I	TC	6-5¾x6	D	4	935	265-2100	221-2100	187-1600	14.80	750	99	13.9	750-1200	2600	.....	VI	2.90-.500
15	DFXHF	Own	B,M,R	TC	6-5¾x6	D	4	935	265-2100	221-2100	187-1600	14.80	750	99	13.9	750-1200	2600	.....	.....	2.90-.500
16	DNXV8D	Own	T,B,Tr,M,I	TC	8-4½x6	D	4	1468	398-1800	338-1800	299-1600	14.80	750	94	15.1	1100-1200	4200	.....	VI	2.87-.500
17	DNXV8DTS	Own	M,I	TC	8-4½x6	D	4	1468	600-1800	425-1800	345-1600	14.80	750	118	13.9	1320-1400	4800	.....	VI	2.87-.500
18	DIXV8		T,B	TC	8-4x4	D	4	402	160-3000	136-3000	108-2200	15.00	750	97	9.7	310-1800	1650	.....	VI	1.62-.347
19	**Hill** 2R	Own	M,I	PC	2-3½x5½	D	4	106	19-1500	17.3-1500	16.6-1500	16.00	.....	85	64.04	68-1200	1225	1300	VI	1.37-.372
20	4R	Own	M,I	PC	4-3½x5½	D	4	212	41-1500	36.3-1500	33-1500	16.00	.....	85	44.04	142-1200	1615	1750	VI	1.37-.372
21	6R	Own	M,I	PC	6-3½x5½	D	4	317	63-1500	55-1500	50-1500	16.00	.....	85	37.84	225-1200	2150	2300	VI	1.37-.372
22	4F	Own	M,I	PC	4-3½x5½	D	4	243	48-1500	41-1500	39-1500	16.50	.....	90	41.44	175-1200	1615	1750	VI	1.37-.372
23	6F	Own	M,I	PC	6-3½x5½	D	4	364	72-1500	61.5-1500	58-1500	16.50	.....	90	37.14	262-1200	2150	2300	VI	1.37-.372
24	6K	Own	M,I	PC	6-4¼x5½	D	4	480	88-1500	72-1500	68-1500	17.00	.....	88	31.64	290-1200	2150	2300	VI	1.57-.372
25	**International** UD284	Own	Tr,I	PC	4-4x5½	D	4	264	57.5-1800	50-1800	42.7-1800	16.50	.....	71	29.3	186-1100	1250	.....	VI	1.50-.500
26	UD-350	Own	Tr,I	PC	4-4½x5½	D	4	350	78.5-1800	70-1800	60-1800	15.61	.....	73	26.3	248-1200	1525	.....	VI	1.66-.500
27	UD14A	Own	Tr,I	PC	4-4½x6½	W	4	461	89-1600	76-1400	60.8-1400	15.00	.....	75	32.3	322-850	1960	.....	VI	1.78-.532
28	UD625	Own	Tr,I	PC	6-4½x5½	D	4	525	121-1800	115-1800	86-1800	15.40	.....	72	25.5	380-1150	2190	.....	VI	1.66-.532
29	UD16A	Own	Tr,I	PC	6-4¾x6½	W	4	691	131-1600	125-1600	100-1600	15.00	.....	72	30.2	462-850	3025	.....	VI	1.78-.532
30	UD1091	Own	Tr,I	PC	6-5⅜x7	D	4	1091	203-1400	190-1400	152-1400	15.00	.....	79	26.9	704-1000	4095	.....	VI	2.31-.625
31	**Kermath** *2-127		M	TC	2-4½x4½	D	4	127	28-1900	27-1900	20-1800	15.50	750	79	43.5	81-1400	.....	870	VI	1.62-.375
32	**4-226		M	TC	4-4x4½	D	4	226	70-2600	60-2600	50-2000	15.50	750	66	24.5	162-1400	.....	1200	VI	1.62-.375
33	**6-298		M	TC	6-3⅝x4½	D	4	298	83-2600	75-2200	60-1900	15.50	750	64	21.5	208-1500	.....	1355	VI	1.62-.375
34	*6-529		M	TC	6-4½x5½	D	4	529	147-2200	140-2000	120-1800	14.50	750	95	18.8	365-1350	.....	2100	VI	2.00-.395
35	*6-936		M	TC	6-5½x6	D	4	936	260-2100	250-2000	190-1600	14.50	750	99	24.5	750-1200	.....	4200	VI	2.37-.500
36	**Mack** END673		T,B	AS	6-4⅞x6	D	4	672	170-2100	160.4-2100	.....	16.50	1250	.....	.....	480-1200	1927	.....	VI	2.05-.563
	Minneapolis-Moline																			
37	D283	Lanova	Tr,I	EC	6-4¼x5	N	4	284	49-1300	.....	.....	14.90	.....	.....	.....	201-1150	1300	.....	VI	1.90-.500
38	D425	Lanova	Tr,I	EC	6-4½x5	N	4	426	66-1300	.....	.....	14.90	.....	.....	.....	282-900	1940	.....	VI	1.90-.500
39	**Murphy** ME-4	Own	I	DI	4-5⅜x6½	W	4	679	.....	106-1200	80-1200	16.00	.....	88	46.24	475-950	‡4300	‡6850	V4	1.62-.500
40	11	Own	I	DI	4-5⅜x6½	W	4	675	.....	110-1200	100-1200	16.0	.....	98	43.04	530-800	‡4300	‡6650	V4	1.62-.500
41	*111	Own	I	DI	4-5⅜x6½	W	4	675	.....	125-1200	115-1200	16.0	.....	112	37.84	560-1050	‡4350	‡6825	V4	1.62-.500
42	12	Own	I	DI	4-6x6½	W	4	735	.....	120-1200	110-1200	16.00	.....	99	39.54	600-750	‡4300	‡6650	V4	1.62-.500
43	*112	Own	I	DI	4-6x6½	W	4	735	.....	140-1200	125-1200	16.0	.....	112	34.84	640-950	‡4350	‡6825	V4	1.62-.500
44	20	Own	I	DI	6-5⅜x6½	W	4	927	.....	150-1200	135-1200	16.0	.....	99	39.54	710-900	‡5200	‡8000	V4	1.37-.500
45	*20G				6-5⅜x6½	W	4	927	.....	150-1200	135-1200	.....	.....	99	39.5	709-900	‡5200	.....	V4	.....
46	*120	Own	I	DI	6-5⅜x6½	W	4	927	.....	160-1200	145-1200	16.0	.....	103	36.84	740-900	‡5300	‡8265	V4	1.37-.500
47	21	Own	I	DI	6-5⅜x6½	W	4	1013	.....	165-1200	150-1200	16.00	.....	99	34.74	825-900	‡5200	‡8000	V4	1.62-.500
48	*21G				6-5⅜x6½	W	4	1013	.....	165-1200	150-1200	.....	.....	99	34.7	805-900	‡5200	.....	V4	.....
49	*121	Own	I	DI	6-5⅜x6½	W	4	1013	.....	190-1200	170-1200	16.00	.....	111	31.24	865-950	‡5300	‡8265	V4	1.62-.500
50	22	Own	I	DI	6-6x6½	W	4	1103	.....	180-1200	165-1200	16.00	.....	99	31.54	920-900	‡5200	‡8000	V4	1.62-.500
51	*122	Own	I	DI	6-6x6½	W	4	1103	.....	210-1200	190-1200	16.00	.....	114	27.94	950-900	‡5300	‡8265	V4	1.62-.500
52	211	Own	I	DI	4-5⅜x6½	W	4	675	.....	120-1400	110-1400	16.00	.....	92	39.14	510-1000	‡4300	‡6650	V4	1.62-.500
53	*311	Own	I	DI	4-5⅜x6½	W	4	675	.....	135-1400	125-1400	16.00	.....	105	34.84	565-1000	‡4350	‡6825	V4	1.62-.500
54	212	Own	I	DI	4-6x6½	W	4	735	.....	139-1400	129-1400	16.00	.....	92	35.84	567-1000	‡4300	‡6650	V4	1.62-.500
55	*312	Own	I	DI	4-6x6½	W	4	735	.....	145-1400	135-1400	16.00	.....	104	32.24	635-1000	‡4350	‡6825	V4	1.62-.500
56	220	Own	I	DI	6-5⅜x6½	W	4	927	.....	156-1400	146-1400	16.00	.....	88	35.84	685-1000	‡5200	‡8000	V4	1.37-.500
57	*320	Own	I	DI	6-5⅜x6½	W	4	927	.....	169-1400	157-1400	16.00	.....	99	33.84	728-1000	‡5300	‡8265	V4	1.37-.500
58	221	Own	I	DI	6-5⅜x6½	W	4	1013	.....	174-1400	162-1400	16.00	.....	88	32.14	760-1000	‡5200	‡8000	V4	1.62-.500
59	*321	Own	I	DI	6-5⅜x6½	W	4	1013	.....	187-1400	164-1400	16.00	.....	103	28.84	850-1000	‡5300	‡8265	V4	1.62-.500
60	222	Own	I	DI	6-6x6½	W	4	1103	.....	181-1400	175-1400	16.00	.....	94	29.24	835-1000	‡5200	‡8000	V4	1.62-.500
61	*322	Own	I	DI	6-6x6½	W	4	1103	.....	220-1400	208-1400	16.00	.....	105	25.94	975-1000	‡5300	‡8265	V4	1.62-.500
62	*21G				6-5⅜x6½	W	.....	1013	-1200	-1200	158-1200	.....	.....	.....	29.7	699-1200	‡4700	.....	V4	.....
63	*22G				6-6x6½	W	.....	1103	-1200	-1200	174-1200	.....	.....	.....	27.0	750-1200	‡4700	.....	V4	.....
64	24				6-6¾x6½	W	.....	1245	-1200	-1200	194-1200	.....	.....	.....	24.2	880-1200	‡4700	.....	V4	.....
65	124				6-6¾x6½	W	.....	1245	-1200	-1200	222-1200	.....	.....	.....	21.6	970-1200	‡4800	.....	V4	.....
66	*220G				6-5⅜x6½	W	.....	927	-1400	-1400	156-1400	.....	.....	.....	30.1	570-1400	‡4700	.....	V4	.....
67	*221G				6-5⅜x6½	W	.....	1013	-1400	-1400	174-1400	.....	.....	.....	27.0	640-1400	‡4700	.....	V4	.....
68	*222G				6-6x6½	W	.....	1103	-1400	-1400	187-1400	.....	.....	.....	25.1	700-1400	‡4700	.....	V4	.....
69	224				6-6¾x6½	W	.....	1245	-1400	-1400	211-1400	.....	.....	.....	22.2	790-1400	‡4700	.....	V4	.....
70	324				6-6¾x6½	W	.....	1245	-1400	-1400	236-1400	.....	.....	.....	20.3	890-1400	‡4800	.....	V4	.....
71	*24G				6-6¾x6½	W	.....	1245	200-1200	195-1200	185-1200	.....	.....	.....	25.4	1010-900	4700	.....	V4	.....
72	*22KG				6-6¾x6½	W	.....	1245	215-1400	210-1400	200-1400	.....	.....	.....	22.4	910-1000	4700	.....	V4	.....

For abbreviations, see pages 258 and 259

For Directory of the Engine Manufacturers listed above, see page 263

ENGINES—*continued*

VALVES	PISTON					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM							START-ING METHOD		OVERALL DIMENSIONS				
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in—	Materials (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifices	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top o. Air Cleaner (In.)	Clutch Housing (S.A.E. Number)	Line Number
1.31-.375	Alu	4.84	5.88	4	2	1.19-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	.....	.....	LDA	A-EI	39⅝	24	23½	.....	1
1.25-.395	Alu	4.84	4.00	3	2	1.50-3.62	F	CNM	8.50	7.31	7	3.50	AB	AB	C	Pi	1650	.....	.....	LDA	AEQ	44½ (2)	27	42½	1,3	2
1.25-.395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650	.....	.....	LDA	AEQ	44½ (2)	27	42½	1,3	3
1.25-.395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650	.....	.....	LDA	AEQ	44½ (2)	27	42½	1,3	4
1.25-.395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650	.....	.....	LDA	AEQ	85½ (2)	30½	17½	1,3	5
1.37-.395	Alu	6.84	7.08	4	2	1.62-3.75	F	CNM	9.37	8.89	7	3.50	AB	AB	C	Pi	1650	.....	.....	LDA	AEQ	40½ (2)	28½	38½	1,2	6
1.37-.395	Alu	6.84	6.90	4	2	1.62-3.84	F	CNM	9.37	8.89	7	3.50	AB	AB	C	Pi	1650	.....	.....		Ele	29½	21½	38½		7
1.37-.395	Alu	6.84	7.53	4	2	1.62-3.93	F	CNM	9.37	8.89	7	3.50	AB	AB	C	Pi	1650	.....	.....	LDA	AEQ	40½ (2)	28½	38½	1,2	8
1.62-.500	Alu	7.53	9.94	4	2	2.00-4.16	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	.....	.....	LDA	AEQ	61½ (2)	30½	46½	0,1	9
1.62-.500	Alu	7.53	11.99	4	2	2.00-4.42	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	.....	.....	LDA	AEQ	61½ (2)	30½	46½	0,1	10
1.62-.500	Alu	7.53	12.37	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	.....	.....	LDA	AEQ	61½ (2)	30½	46½	0,1	11
1.62-.500	Alu	7.53	12.34	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	.....	.....	LDA	AEQ	61½ (2)	30½	46½	0,1	12
1.91-.500	Alu	7.53	12.34	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	.....	.....	LDA	AEQ	73½	30½	46		13
1.90-.500	Alu	7.53	12.60	4	2	2.00-4.90	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	.....	.....	LDA	AEQ	61½ (2)	30	47½	0,1	14
1.62-.500	Alu	7.53	12.34	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	.....	.....	LDA	AEQ	61½ (2)	46⅞	31½	0,1	15
2.12-.500	Alu	7.53	12.90	4	2	2.00-5.40	F	CNM	13.25	.....	6	4.50	AB	AB	C	Pi	2000	.....	.....	LD	AEQ	58½ (2)	42	55½	0,1	16
2.12-.500	Alu	7.53	12.90	4	2	2.00-5.40	F	CNM	13.25	.....	6	4.50	AB	AB	C	Pi	2000	.....	.....	LD	AEQ	76 (2)	42	55½	0,1	17
1.37-.347	Alu	4.83	3.75	3	2	1.13-3.39	F	CMS	7.75	4.09	5	3.50	.....	AB	C	Pi	2000	.....	.....		Ele	39½	32½	37½	.....	18
1.37-.372	Lyn	4.87	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	3	2.93	AB	A-E	C	Pi	1800	Uni	Fra	AL	E-H	35	28	40	1	19
1.37-.372	Lyn	4.87	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	5	2.93	AB	A-E	C	Pi	1800	Uni	Fra	AL	Ele	47½	28	40	1	20
1.37-.372	Lyn	4.87	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	7	2.93	AB	A-E	C	Pi	1800	Uni	Fra	AL	Ele	58	27	45	1	21
1.37-.372	Lyn	4.87	3.25	3	2	1.50-2.96	F	4140	13.25	7.3	5	2.93	AB	AB	C	Pi	1800	Uni	Fra	AL	Ele	47½	28	40	1	22
1.37-.372	Lyn	4.87	3.25	3	2	1.50-2.96	F	4140	13.25	7.3	7	2.93	AB	AB	C	Pi	1800	Uni	Fra	AL	Ele	58	27	45	1	23
1.37-.372	Lyn	4.87	4.61	3	2	1.50-3.46	F	4140	13.25	7.3	7	2.93	AB	AB	C	Pi	1800	Uni	Fra	AL	Ele	58	27	45	1	24
1.31-.500	AA	5.70	3.92	3	2	1.31-3.28	F	1040	10.00	7.34	5	3.75	Own	Own	C	Si	700	Don	Pur	Own	GS	39½	23	46¼	2	25
1.47-.500	AA	6.44	4.91	3	2	1.50-3.71	F	1040	11.00	8.88	5	4.13	Own	Own	C	Si	700	Don	Pur	Own	GS	41½	22½	53¼		26
1.53-.532	AA	6.19	7.36	4	2	1.62-4.08	F	1040	13.25	12.06	5	3.25	Own	Own	C	Si	700	Don	Pur	Own	GS	47½	27½	64¾	1	27
1.41-.532	AA	6.44	6.25	3	2	1.50-3.71	F	1040	11.00	8.87	7	3.56	Own	Own	C	Si	700	Don	Pur	Own	GS	56½	30½	55½	1	28
1.53-.532	AA	6.19	7.36	4	2	1.62-4.10	F	1040	13.25	12.06	7	3.50	Own	Own	C	Si	700	Don	Pur	Own	GS	69½	31⅞	69	0	29
1.88-.625	AA	7.58	12.75	3	2	1.88-5.00	F	1040	13.25	16.73	7	4.12	Own	Own	C	Si	700	Don	Pur	Own	GS	71⅞	32½	71½	0	30
1.12-.375	Alu	4.84	4.00	4	2	1.19-3.45	F	CNM	8.00	5.31	2	3.81	AB	AB	C	Pi	1650	AC	Pur	DR	Ele	41⅞	23	38½	.....	31
1.12-.375	Alu	4.84	4.00	4	2	1.19-3.45	F	CNM	8.00	5.31	6	3.00	AB	AB	C	Pi	1650	AC	Pur	DR	Ele	47½	22½	33	.....	32
1.12-.375	Alu	4.84	3.88	4	2	1.19-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	AC	Pur	DR	Ele	54½	22½	33	.....	33
1.37-.395	Alu	6.84	7.93	4	2	1.62-3.93	F	CNM	9.37	8.89	7	3.50	AB	AB	C	Pi	1650	AM	Pur	DR	Ele	60½	27½	37½	.....	34
1.99-.500	Alu	7.53	12.39	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.45	AB	AB	C	Pi	2000	AM	Pur	DR	Ele	66½	34½	64½	.....	35
1.69-.563	AA	5.64	7.07	3	2	1.63-4.22	F	4130	11.25	7.75	7	4.00	AB	AB	C	Mu	2200	Ver	P-L	LDI	A-EI	53½	30½	46¼	1	36
1.38-.500	AA	5.06	5.00	3	2	1.50-3.63	F	1040	10.00	6.00	3	2.91	AB	AB	C	Pi	1800	Don	Own	DR	Ele	44½	21½	41	.....	37
1.38-.500	AA	5.06	5.00	3	2	1.50-3.63	F	1040	10.00	5.49	4	2.91	AB	AB	C	Pi	1800	Don	Own	DR	Ele	57½	22½	41⅞	.....	38
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	56½	29½	62½	0	39
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	56½	29½	62½	0	40
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	56½	29½	62½	0	41
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	56½	29½	62½	0	42
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	56½	29½	62½	0	43
1.37-.500	CI	7.75	19.7	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	75½	37	60½	00	44
							F				7	4.00	Own	Own	...	Mu	...			.....	Ele	75½	37	77½	.....	45
1.37-.500	CI	7.75	19.7	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	75½	37	84½	00	46
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	76½	37	60½	00	47
							F				7	4.00	Own	Own	...	Mu	...			.....	Ele	75½	37	77½	.....	48
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	76½	37	84½	00	49
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	76½	37	77½	00	50
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	76½	37	84½	00	51
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	58½	29½	62½	0	52
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	58½	29½	62½	0	53
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	58½	29½	62½	0	54
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	58½	29½	62½	0	55
1.37-.500	CI	7.75	19.7	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	77½	37	60½	0	56
1.37-.500	CI	7.75	19.7	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	77½	37	84½	0	57
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	77½	37	60½	0	58
1.62-.500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	77½	37	84½	0	59
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	77½	37	84½	0	60
1.62-.500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	...	Don	Own	.....	Ele	77½	37	84½	0	61
											7	4.00								.....	Ele	75½	37	77½	.....	62
											7	4.00								.....	Ele	75½	37	77½	.....	63
											7	4.00								.....	Ele	76½	37	84½	.....	64
											7	4.00								.....	Ele	76½	37		.....	65
											7	4.00								.....	Ele	77½	37		.....	66
											7	4.00								.....	Ele	77½	37		.....	67
											7	4.00								.....	Ele	77½	37		.....	68
											7	4.00								.....	Ele	77½	37	84½	.....	69
											7	4.00								.....	Ele	77½	37		.....	70
							F	DFS			7	4.00								.....	Ele	77½	38	63	.....	71
							F	DFS			7	4.00								.....	Ele	77½	38	63	.....	72

For abbreviations, see pages 258 and 259

For Directory of the Engine Manufacturers listed above, see page 263

1955 AUTOMOTIVE DIESEL

Line Number	ENGINE MAKE AND MODEL	Built Under License from	GENERAL: Designed for	Type	Number of Cylinders, Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.)	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	VALVES: Arrangement	VALVES: Intake Port Diameter and Lift (In.)
1	Oliver ... 55, ..or 99D	Laneva	Tr	EC	6-4x4	D	4	302	...	69-1675	55-1675	15.50	...	86	...	230-1100	...	...	I	1.38- .344
2	... 166D	Laneva	I	EC	4-3 1/2x3 1/4	W	4	129	...	24.2-2000	21.2-1800	15.50	...	72	32.1	80- 800	680	...	I	1.06- .313
3	... 177D	Laneva	I	EC	6-3 1/2x3 1/4	W	4	194	...	38.2-2000	33-1800	15.50	...	75	28.0	134- 800	925	...	I	1.06- .313
4	... 188D	Laneva	I	EC	6-3 1/2x4	W	4	231	...	44.5-2000	38.8-1800	15.50	...	74	25.3	159- 800	980	...	I	1.22- .388
5	... 199D	Laneva	I	EC	6-4x4	D	4	302	...	73-2000	57-1600	15.50	...	83	21.2	230-1100	1210	...	I	1.38- .344
6	... Super 55D	Laneva	Tr	TC	4-3 1/2x3 1/4	W	4	144	...	38.5-2000	31-2000	15.75	480	85	16.6	103.5-1500	516	...	I	1.13- .360
7	... Super 66D	Laneva	Tr	TC	4-3 1/2x3 1/4	W	4	144	...	38.5-2000	31-2000	15.75	480	85	16.4	103.5-1500	508	...	I	1.13- .360
8	... Super 77D	Laneva	Tr	TC	6-3 1/2x3 1/4	W	4	216	...	61-1600	34.8-1600	15.50	480	80	18.7	148-1200	652	...	I	1.13- .360
9	... Super 88D	Laneva	Tr	TC	6-3 1/2x4	W	4	268	...	86.5-1600	47-1600	15.50	480	88	15.3	185-1200	720	...	I	1.38- .344
10	Onan ... DSP	...	I	PC	1-3 1/2x3 1/2	N	4	33.7	...	5.79-2000	5.5-1600	17.30	...	66	87.3	14.7-1800	370	...	I	1.31- .266
11	... DRP	...	I	PC	2-3 1/2x3 1/2	N	4	67.3	...	14.0-2400	11-1800	17.30	...	77	49.4	34.2-2100	543	...	I	1.31- .265
12	P&H ... 287C-16	...	T,B,Tr,M,R,I	DI	2-4 1/2x5 1/2	W	2	174	82-1400	68-1400	58-1200	16.00	1200	73	16.8&	270-1200	975	1635	VI	No Valves
13	... 387C-16	...	T,B,Tr,M,R,I	DI	3-4 1/2x5 1/2	W	2	261	120-1400	105-1400	90-1200	16.00	1200	75	13.2&	425-1300	1190	2120	VI	No Valves
14	... 487C-16	...	T,B,Tr,M,R,I	DI	4-4 1/2x5 1/2	W	2	348	160-1400	144-1400	127-1200	16.00	1200	80	11.8&	600-1350	1500	2530	VI	No Valves
15	... 687C-16	...	T,B,Tr,M,R,I	DI	6-4 1/2x5 1/2	W	2	522	255-1400	205-1400	190-1200	16.00	1200	75	10.2&	825-1300	1820	3000	VI	No Valves
16	Packard ... 2D650	...	M,I	PC	6-5 5/8x6 1/4	W	4	852	...	...	300-2000	15.40	1000	142	7.3&	...	2195	2770	V4	1.67- .480
17	... 1D1700	...	M,I	PC	12-5 5/8x6 1/4	W	4	1704	...	...	600-2000	15.40	1000	142	5.5&	...	3300	3900	V4	1.67- .480
18	... 1D1135	...	M,I	PC	8-5 5/8x6 1/4	W	4	1136	...	...	400-2000	15.40	1000	142	6.7&	...	2700	3380	V4	1.67- .480
19	... 1D2270	...	M,I	PC	16-5 5/8x6 1/4	W	4	2272	...	...	800-2000	15.40	1000	142	5.6&	...	4660	5350	V4	1.67- .480
20	Palmer ... PM673	Mack	M	DI	6-4 1/2x6	D	4	673	...	145-1800	129-1800	16.50	1200	86	28.0	950-1200	...	3400	VI	2.05- .563
21	Rod Wing ... D4-48	Wau	M	TC	4-3 1/2x3 1/4	W	4	144	45-2400	40-2400	32-2000	17.00	950	88	45.6	90-1400	...	1488	VI	1.25- .312
22	... DO	...	M	TC	4-4 1/4x4 1/2	D	4	250	79-2600	75-2400	56-1600	15.00	750	91	33.9	182-1400	...	1900	VI	1.62- .375
23	... D8-160	...	M	TC	6-5 1/4x6	W	4	779	160-2000	138-2000	102-1400	17.50	750	80	42.2	600-1000	...	4310	VI	2.25- .500
24	... D8-200	...	M	TC	6-6 1/4x8 1/2	W	4	1197	225-1600	186-1600	152-1300	16.50	750	83	42.2	845-1000	...	4310	VI	2.37- .656
25	Scripps ... 7000-1, 2, 3	...	M	TC	4-4 1/2x4 1/2	D	4	256	79-2600	66-2600	53-1900	15.00	750	91	23.6	185-1400	...	1485	VI	2.37- .729
26	... 8000-1, 2, 3	...	M	TC	6-3 3/4x4 1/2	D	4	298	94-2600	71-2600	59-1800	15.00	750	88	25.2	208-1500	...	1485	VI	1.62- .375
27	Sheppard ... 13D, E & F	...	Tr,M,I	PC	2-4 1/4x5	W	4	142	33-2000	25-1800	22-1800	22.0	625	66	47.7&	106-1200	1050	1500	VI	1.37- .313
28	... 6D, E & F	...	Tr,M,I	PC	3-4 1/4x5	W	4	213	50-2000	38-1800	34-1800	22.0	625	69	38.0&	161-1200	1325	1750	VI	1.37- .313
29	... 12D, E & F	...	T,M,I	PC	6-4 1/4x5	W	4	426	100-2000	75-1800	67-1800	22.0	625	70	26.6&	325-1200	1790	2330	VI	1.37- .313
30	... 8	...	M,R,I	PC	1-3 1/2x4	N	4	38.4	8.4-2000	6.1-2000	5.6-2000	22.0	660	55	102.6&	25-1400	575	575	VI	1.09- .209
31	... 17	...	Tr,M,R,I	PC	2-3 1/2x4	N	...	76.8	20-2000	15-1800	13.5-1800	22.0	660	55	32.5&	50-1400	500	500	VI	1.09- .209
32	... 16	...	Tr,M,I	PC	4-4 1/2x5	W	4	319	73.5-1800	56-1800	51.5-1800	22.0	...	71	29.0	190-1075	1500	...	VI	1.56- ...
33	Sterling ... VD6	...	M,R,I	DI	6-8x9	W	4	2714	...	330-1200	325-1200	14.00	1000	90	28.2&	1085-1000	9160	8850	VI	2.37- .729
34	... VDS6S	...	M,R,I	DI	6-8x9	W	4	2714	750-1200†	660-1200	583-1200	11.35	1340	137	17.4&	...	9775	12770	VI	2.37- .729
35	... VDS6S	...	M,R,I	DI	8-8x9	W	4	3619	1000-1200†	880-1200	700-1200	11.35	1340	137	16.2&	3310-1000	12100	17000	VI	2.37- .729
36	Superior ... (8)40	...	M,I	DI	6-8 1/4x10 1/2	W	4	3575	...	...	325- 900	12.20	800	80	44.5&	...	14500	16000	VI	3.12- .875
37	... 40X	...	M,I	DI	6-8 1/4x10 1/2	W	4	3575	...	...	490- 900	12.20	900	120	31.6&	...	15500	17000	VI	3.12- .778
38	... 40L	...	R	DI	6-8 1/4x10 1/2	W	4	3575	...	...	375-1100	12.00	800	76	50.6	...	19000	...	V4	3.06- .697
39	... 40LX	...	R	DI	6-8 1/4x10 1/2	W	4	3575	...	...	500-1100	12.00	860	102	46.0	...	23000	...	V4	3.06- .620
40	... 40ALX	...	R	DI	6-8 1/4x10 1/2	W	4	3575	...	...	675-1100	12.00	1200	136	34.1	...	23000	...	V4	3.06- .620
41	... 40C-LX-6	...	...	...	6-8 1/4x10 1/2	W	4	3575	...	...	675-1100	...	...	136	22.4	...	15100	...	VI	3.63- ...
42	... 40C-LX-8	...	M,R,I	DI	8-	W	4	4767	...	...	900-1100	...	...	136	20.5	...	18410	...	VI	3.63- ...
43	Waukesha ... 160-DLC	...	T,Tr,I	TC	4-3 1/2x3 1/4	W	4	144	45-2400	32-2200	28-2000	17.00	750	71	18.3	102-1800	4[.]3	...	VI	1.25- .312
44	... 165-DLC	...	T,Tr,I	TC	4-3 1/2x3 1/4	W	4	216	60-2400	54-2400	44-2000	17.00	750	69	18.1	152-1020	800	...	VI	1.25- .312
45	... 190-DLCA	...	T,Tr,I	TC	6-3 1/4x4	W	4	265	84-2600	64-2200	46-2000	17.00	750	69	18.9	191-1400	868	...	VI	1.37- .349
46	... 195-DLCA	...	T,Tr,I	TC	6-4x4	D	4	302	98-2600	83-2200	62-2000	17.00	750	81	15.6	221-1800	965	...	VI	1.56- .344
47	... 135-DKB	...	T,B,Tr	TC	6-4 1/4x5	D	4	426	147-2600	104-2000	86-1800	17.50	750	69	16.3	328-1600	1398	...	VI	- .456
48	... 135-DKBS	...	T,B,Tr	TC	6-4 1/4x5	D	4	426	165-2600	...	...	17.50	750	...	...	400-1800	1488	...	VI	1.75- .456
49	... 146-DKB	...	T,B	TC	6-5 1/4x6	W	4	779	200-2150	160-2100	147-1800	17.50	750	79	16.4	584-1000	2320	...	VI	2.25- .477
50	... 146-DKBS	...	T,B	TC	6-5 1/4x6	W	4	779	250-2100	...	...	17.50	750	...	...	706-1800	2445	...	VI	2.25- .477
51	... WAKD	...	T,I	TC	6-6 1/4x8 1/2	W	4	1197	224-1000	191-1800	167-1600	16.50	750	69	22.8	840-1000	3800	...	VI	2.37- .656
52	... WAKDS	...	T,I	TC	6-6 1/4x8 1/2	W	4	1197	352-1800	296-1800	244-1600	16.50	750	101	16.1	1062-1800	3925	...	VI	2.37- .656
53	... NKD	...	I	TC	6-7x8 1/2	W	4	1905	297-1200	267-1200	215-1050	17.00	750	76	43.8	1383- 600	9285	...	VI	2.67- .709
54	... NKDS	...	I	TC	6-7x8 1/2	W	4	1905	390-1200	351-1200	312-1200	17.00	750	99	30.2	1730-1000	9435	...	VI	2.67- .709
55	... LRD	...	I	TC	8-8 1/4x8 1/2	W	4	2894	415-1200	374-1200	300-1000	15.00	750	77	34.3	2160-600	10300	...	VI	3.25- .704
56	... LRDS	...	I	TC	8-8 1/4x8 1/2	W	4	2894	570-1200	513-1200	388-1000	15.00	750	100	26.9	2545-1000	10450	...	VI	3.25- .704

ABBREVIATIONS

*—Without fan or muffler.
‡—Based on automotive or industrial weight.
°—Supercharged.
*—Bottom of gear box to top of heat exchanger.
‡—Including base.
††—Air Cooled—Used in Duplex truck.
‡—Includes radiator.
°—146-2300 for buses.
†—With all accessories.
†—Includes reverse and reduction gear.
‡‡—Bottom of base to highest point on engine.
^—Modified.
^—Dual fuel engine; diesel oil or natural gas.
*—Also available in reduction gear models.
**—Also available in right hand rotation.
(1)—Horizontal engine.
(2)—Fan to flywheel housing.
(3)—To top of water outlet (highest point).
(4)—To engine center line.
(5)—All models are available with governed speed of 1400 RPM.
(6)—All engines also built in 8-cyl. models.
(7)—Top of breather cap to engine center line.
(11)—Includes radiator.
(12)—From bottom of pan to air cleaner mounting flange.
(15)—Including radiator and gear box.
A—Air.
AA—Aluminum Alloy.
AB—American Bosch.
AC—AC Spark Plug Co.
ACB—AC or Bosch.
Ach—Air chamber.
A-E—American Bosch or Ex-Cell-O Corp.
AEG—Air, electric or auxiliary gasoline engine.
A-El—Air or Electric.
AF—Aluminum forging.
Al—Auto-Lite (electric), Ingersoll-Rand (air).
AL—Electric Auto-Lite Co.
Alu—Aluminum.
AM—Air-Maze Corp.
AS—Air-swirl, direct injection.
AT—Arma Steel, tin plated.
B—Bugas.
BB—Bendix or Bosch.
BBD—Bendix, Bosch or Demco.
B-D—Bosch or Demco.
B-P—Bosch or Purolator.
BR—Bosch or Roosa-Master.
BS—Bosch or Scintilla.
Bur—Burgess.
C—Closed.
Cb—Commercial and Bosch.
CB—Cuno and Bosch.
CBR—C.A.V., Bosch or Roosa.
C-F—Cuno and Fram.
CI—Cast Iron.
CMS—Chrome moly steel.
CNM—Chrome-nickel molybdenum.
Com—Commercial Filters Corp.
Con—Cuno Engineering Corp.
D—Dry liners used.
DA—Delco-Remy and Auto-Lite.
DeL—DeLuxe Products Corp.
Dem—Demco.
DFS—Drop forged steel.
DI—Direct injection.
D-M—Donaldson or Air Maze.

For Directory of the Engine Manufacturers listed above, see page 263

Additional Diesel Engines used in Diesel-Electric Locomotives will be found on page 251

ENGINES—*concluded*

VALVES		PISTON				PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM					STARTING METHOD		OVERALL DIMENSIONS			CLUTCH HOUSING (S.A.E. Numbers)	Line Number
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked In—	Materials (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifices	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)		
1.17- .342	CI	4.44	6.00	3	1	1.25-3.44	F	1045	6.75	3.75	4	2.63	AB	AB	C	Pi	1750	Don	Fra	DR	Ele	43⅞	21¼	38	.....	1
.936- .281	CI	4.19	3.80	3	1	1.25-2.75	F	1045	6.75	2.00	3	2.25	AB	AB	C	Pi	1750	Don	Fra	DR	Ele	30⅛	19	40	.....	2
.936- .281	CI	4.19	3.80	3	1	1.25-2.75	F	1045	6.75	2.00	4	2.25	AB	AB	C	Pi	1750	Don	Fra	DR	Ele	40	22	41	.....	3
1.03- .362	CI	4.19	4.50	3	1	1.25-2.75	F	1045	6.75	2.96	4	2.63	AB	AB	C	Pi	1750	Don	Fra	DR	Ele	41½	22	41	.....	4
1.17- .342	CI	4.44	6.00	3	1	1.25-3.44	F	1045	6.75	3.75	4	2.63	AB	AB	C	Pi	1750	Don	Fra	DR	Ele	42⅞	22	42⅛	3	5
1.00- .360	AA	3.75	2.25	3	1	1.25-2.75	F	1045	6.75	2.69	3	2.25	AB	AB	C	Pi	1750	Don	F-A	DR	Ele	30⅛	18	27⅛	.....	6
1.00- .360	AA	3.75	2.25	3	1	1.25-2.75	F	1045	6.75	2.69	3	2.25	AB	AB	C	Pi	1750	Don	F-A	DR	Ele	30⅛	18	27⅛	.....	7
1.00- .360	AA	3.75	3.25	3	1	1.25-2.75	F	1045	6.75	2.69	4	2.25	AB	AB	C	Pi	1750	Don	F-A	DR	Ele	30⅛	18	29⅞	.....	8
1.17- .344	CI	4.19	6.44	3	1	1.25-3.00	F	1045	6.75	2.94	4	2.63	AB	AB	C	Pi	1750	Don	F-A	DR	Ele	41½	18	31¾	.....	9
1.22- .295	Van	4.13	2.25	3	2	1.25-3.25	F	1040	6.13	2.61	2	2.75	Dem	Dem	C	Pi	2250	Don	Fra	Own	Ha.	22⅝	21½	31⅞	.....	10
1.22- .295	Van	4.13	2.25	3	2	1.25-3.25	F	1040	6.13	2.61	2	2.75	Dem	Dem	C	Pi	2500	Don	Fra	AL	Ele	23	30¼	27	.....	11
2.30- .530	AA	6.35	7.13	4	2	1.75-3.88	F	1141	11.88	7.88	3	4.00	BB	BBD	C	Si	2200	D-M	Ff	Al	A-EI	34½	29½	40⅞	1	12
2.30- .530	AA	6.35	7.13	4	2	1.75-3.88	F	1141	11.88	7.88	4	4.00	BB	BBD	C	Si	2200	D-M	Ff	Al	A-EI	43⅞	29½	42⅞	1	13
2.30- .530	AA	6.35	7.13	4	2	1.75-3.88	F	1141	11.88	7.88	5	4.00	BB	BBD	C	Si	2200	D-M	Ff	Al	A-EI	43⅞	29½	42⅞	1	14
2.30- .530	AA	6.35	7.13	4	2	1.75-3.88	F	1141	11.88	7.88	7	4.00	BB	BBD	C	Si	2200	D-M	Ff	Al	A-EI	88⅛	29½	42⅞	1	15
1.42- .460	AF	5.47	6.26	3	2	1.75-4.63	F	4340	11.25	11.81	7	4.00	AB	AB	C	Pi	1675	AM	Fra	LN	Ele	75	33⅞	51⅞	.....	16
1.42- .460	AF	5.47	6.26	3	2	1.75-4.63	F	4340	11.25	10.57	7	4.00	AB	AB	C	Pi	1675	AM	Pur	LN	A	65½	41⅞	64⅞	.....	17
1.67- .460	AF	5.47	6.26	3	2	1.75-4.63	F	4340	11.25	10.57	6	4.00	AB	AB	C	Pi	1675	AM	Pur	LN	A	75½	41⅞	64	.....	18
1.67- .460	AF	5.47	6.26	3	2	1.75-4.63	F	4340	11.25	10.57	9	4.00	AB	AB	C	Pi	1675	AM	Fra	LN	A	121⅞	41⅞	67	.....	19
1.00- .563	AA	5.64	6.75	3	2	1.63-4.22	F	4130	11.25	7.80	7	4.00	AB	AB	...	Mu	2950	Own	Pur	DR	Ele	78	30	.....	.....	20
1.00- .281	CI	4.75	3.28	3	2	1.25-2.75	F	1045	6.75	1.97	3	2.25	AB	AB	C	Pi	1800	Opt	Opt	DR	Ele	42⅛	24½	29½	2	21
1.12- .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	.....	Pur	LN	Ele	80⅛	28⅛	35⅞	2	22
1.81- .531	Alu	7.25	.....	4	2	1.87-4.50	F	4145	11.75	.....	7	4.25	AB	AB	C	Pi	2000	Opt	Com	DR	Ele	74½	32⅛	47⅛	0	23
2.00- .656	Alu	.....	.....	3	2	2.18-5.37	F	4145	13.25	.....	7	4.75	AB	AB	C	Pi	2000	Opt	Com	DR	Ele	68⅞	34⅞	51⅛	0	24
1.12- .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	AC	Pur	DR	Ele	46⅝	24½	32½	4	25
1.12- .375	Alu	4.84	3.56	4	2	1.18-3.29	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	AC	Pur	DR	Ele	53⅞	24½	32½	4	26
1.37- .313	CI	5.93	6.20	3	2	1.50-4.00	F	Fg	10.87	6.60	3	2.75	Sp	Sp	O	Si	3	AM	Fra	AL	Opt	36	33	38	3	27
1.37- .313	CI	5.31	6.20	3	2	1.50-4.00	F	Fg	10.87	6.60	4	2.75	Sp	Sp	O	Si	3	AM	Fra	AL	Ele	35	23	30	3	28
1.37- .313	CI	5.46	6.20	3	2	1.50-4.00	F	Fg	10.87	6.60	7	3.18	Sp	Sp	O	Si	3	AM	Fra	AL	E-H	80	24	40	3	29
1.06- .209	CI	3.81	2.26	3	2	1.06-2.93	F	Fg	8.00	1.65	2	2.00	Sp	Sp	O	Si	3	AM	Fra	AL	E-H	14½	22	30	N	30
1.06- .209	CI	3.81	2.26	3	2	1.06-2.93	F	Fg	8.00	1.65	3	2.00	Sp	Sp	O	Si	3	AM	Fra	AL	E-H	22½	22	29	6	31
1.56-	CI	5.46	.....	3	2	1.50-3.75	F	Fg	10.88	.....	5	3.19	Own	Own	O	Si	3	AM	Fra	AL	Ele	40½	29½	38⅞	.....	32
2.37- .726	Alu	10.25	30.99	4	2	3.00-6.93	F	4340	18.00	46.05	7	6.00	BB	BB	C	Mu	3000	Opt	Cun	LN	A-EI	.....	.....	.....	00	33
2.37- .726	AA	9.62	26.25	4	1	3.00-6.93	F	4340	18.00	46.05	7	6.00	AB	AB	C	Mu	3300	AM	Cun	LN	Ele	114⅛	39½	64	00	34
2.37- .726	AA	9.62	26.25	4	1	3.00-6.93	F	4340	18.00	46.05	9	6.00	AB	AB	C	Mu	3300	AM	Cun	LN	Ele	134½	39½	64	00	35
3.12- .975	CI	13.69	86.29	4	3	3.50-7.00	F	1045	21.00	75.00	7	6.00	B-D	B-D	C	Mu	2800	AM	Pur	Own	A	112	40	70	.....	36
3.12- .775	CI	13.69	86.29	4	3	3.50-7.00	F	1045	21.00	75.00	7	6.00	B-D	B-D	C	Mu	3000	AM	Pur	Own	A	148	48	78	.....	37
3.06- .697	CI	11.72	73.10	4	3	3.50-7.00	F	1045	21.00	67.10	7	6.00	BB	BB	C	Mu	3000	AM	Pur	Opt	Ele	129	58	74	.....	38
3.06- .620	CI	11.72	73.10	4	3	3.50-7.00	F	1045	21.00	67.10	7	6.00	BB	BB	C	Mu	3500	AM	Pur	Opt	Ele	148	86	74	.....	39
3.06- .620	CI	11.72	73.10	4	3	3.50-7.00	F	1045	21.00	67.10	7	6.00	BB	BB	C	Mu	3500	AM	Pur	Opt	Ele	148	86	74	.....	40
3.38-	CI	12.38	.....	4	2	3.50-3.50	F	.....	.....	.....	6	5.75	BB	.....	.....	.....	.....	AM	Pur	Own	A	154⅞	57	89⅛	.....	41
3.38-	CI	12.38	.....	4	2	3.50-3.50	F	.....	.....	.....	6	5.75	BB	.....	.....	.....	.....	AM	Pur	Own	A	166½	59⅞	63½	.....	42
1.00- .281	AA	4.75	.....	3	2	1.25-2.75	F	1045	6.75	.....	3	2.25	AB	AB	C	Pi	1800	Opt	Opt	Opt	Ele	38⅛	19	27½	4	43
1.00- .281	AA	4.16	.....	3	2	1.25-2.75	F	1045	6.75	.....	4	2.25	AB	AB	C	Pi	1800	Opt	Opt	Opt	Ele	40⅝	22	29	3	44
1.12- .349	AA	4.16	.....	3	2	1.25-3.00	F	1045	6.75	.....	4	2.63	AB	AB	C	Pi	1500	Opt	Opt	Opt	Ele	42⅛	22	29	3	45
1.37- .344	AA	4.43	.....	3	2	1.25-3.43	F	1045	6.75	.....	4	2.63	AB	AB	C	Pi	1500	Opt	Opt	Opt	Ele	43	23⅝	30	3	46
1.50- .375	AA	4.94	.....	3	1	1.50-3.62	F	1045	9.50	.....	7	3.25	AB	AB	C	Pi	1600	Opt	Opt	Opt	Ele	47⅝	28	34½	3	47
1.50- .375	AA	4.94	.....	3	1	1.50-3.62	F	1045	9.50	.....	7	3.25	AB	AB	C	Pi	1600	Opt	Opt	Opt	Ele	47⅝	28	41½	3	48
1.81- .807	AA	7.25	.....	4	2	1.87-4.50	F	4145	11.75	.....	7	4.50	AB	AB	C	Pi	2000	Opt	Opt	DRW	E-G	85⅞	28½	47½	0,1	49
1.81- .507	AA	7.25	.....	4	2	1.87-4.50	F	4145	11.75	.....	7	4.50	AB	AB	C	Pi	2000	Opt	Opt	DRW	E-G	85⅞	28½	85⅞	0,1	50
2.00- .656	AA	8.37	.....	2	2	2.18-5.37	F	4145	13.25	.....	7	4.75	AB	AB	C	Pi	2000	Opt	Opt	DRW	E-G	88⅛	33	88⅛	0	51
2.00- .656	AA	8.37	.....	4	2	2.18-5.37	F	4145	13.25	.....	7	4.75	AB	AB	C	Pi	2000	Opt	Opt	DRW	E-G	88⅛	33	92⅛	0	52
2.50- .709	AA	9.75	.....	4	2	2.50-6.03	F	4145	16.38	.....	7	5.25	AB	AB	C	Pi	2000	Opt	Opt	Own	G	78⅞	48	88⅛	00	53
2.50- .709	AA	9.75	.....	4	2	2.50-6.03	F	4145	16.38	.....	7	5.25	AB	AB	C	Pi	2000	Opt	Opt	Own	G	78⅞	48	96⅛	00	54
2.75- .704	AA	11.34	.....	4	1	3.00-7.00	F	4145	21.38	.....	7	5.50	AB	AB	C	Pi	2000	Opt	Opt	Own	G	97½	49½	89⅛	00	55
2.75- .704	AA	11.34	.....	4	2	3.00-7.00	F	4145	21.38	.....	7	5.50	AB	AB	C	Pi	2000	Opt	Opt	Own	G	113½	49½	89⅛	0	56

D-N—Delco-Remy or Nevo.
Don—Donaldson Co.
DR—Delco-Remy Div.
DRW—Delco or Waukesha.
DT—Direct injection, turbulence chamber.
EAM—Air, Electric, or Hand.
EC—Energy cell.
E-G—Electric or auxiliary gasoline engine.
E-H—Electric or hand.
Ele—Electric.
F—Floating.
F-A—Fram or American Bosch.
FB—Fram or Bosch.
Ff—Fulflo.
Fg—Forging.
Fra—Fram Corp.
G—Auxiliary gasoline engine.
GS—Gasoline and spark ignition.
Ha—Hand.
Hes—Homelman.
I—Industrial.
HI—Horizontally In-head.
LB—Lecce Neville or Buda.
L-D—Lecce Neville or Delco Remy.
LDA—Lecce-Neville, Delco-Remy or Autolite.
LDI—Lecce-Neville, Delco-Remy or Ingersoll Rand.
LN—Lecce Neville Co.
Lyn—Lynite.
M—Marine.
Mic—Michiana Products Corp.
MW—Marine Work Boat.
N—No or none.
Mu—Multiple.
Nug—Nugent.
O—Open.
O-D—Own or Delco-Remy.
Opt—Optional.
PC—Precombustion chamber.
Pi—Pintle.
P-L—Purolator or Luberfiner.
P-S—Purolator or Stewart-Warner.
Pur—Purolator Products, Inc.
P-V—Purolator or Vortex.
R—Railcars.
RM—Roots-Master.
s—Shaft horsepower.
Sc—Scintilla Magneto Div.
SC—Swirl chamber.
Sh—Shaft torque; Shaft RPM.
Si—Single.
Sp—Sheppard.
T—Trucks.
TC—Turbulence chamber.
Tr—Tractors.
Uni—United Air Cleaner Div.
V1—Vertically In-Head.
V2—Vertically in head, 2 inlets used.
V4—Vertically in-head, 2 exhaust and 2 intake valves per cylinder.
Van—Vanaii.
Vor—Vortex.
Veg—Varies with gear.
W—Wet liners used.
Wau—Waukesha.
W-L—WGB Oil Clarifier or Luberfiner.
WP—Winslow or Purolator.
Win—Winslow Filter.
WP—Wix or Purolator.
ZFB—Zenith, Fram or Bosch.

For Directory of the Engine Manufacturers listed above, see page 263

Additional Diesel Engines used in Diesel-Electric Locomotives will be found on page 251

GASOLINE ENGINES 1955

SMALL

MAKE AND MODEL	Designed for Use	Number of Cycles	ENGINE: Type	No. of Cylinders	Bore and Stroke (In.)	Total Displacement (Cu. In.)	Compression Ratio (to — 1)	Valve Location	Horsepower: Rated at RPM	Horsepower: Continuous at RPM	Torque — Lb. Ft. at RPM	Weight (Lb.)	GOVERNOR: Used	GOVERNOR: Type	Ignition System Type	FUEL SYSTEM: Type	FUEL SYSTEM: Make	Fuel Used	Starting Method
AIR COOLED																			
Briggs & Stratton — 5S	General Purpose	4	Ver	1	2x1½	4.71	5.29	L	1.00-3200	.95-3200	1.90-3200	30	Y	Av	Mag	MV	Own	G	Rr
6S	General Purpose	4	Ver	1	2x2	6.28	5.86	L	1.60-3200	1.35-3200	2.80-3200	33	Y	Av	Mag	MV	Own	G	Rr
8	General Purpose	4	Ver	1	2x2	6.28	5.86	L	2.00-3600	1.70-3600	2.90-3600	34	Y	MA	Mag	Car	Own	G	Rr
8B-HS	Lawn Mowers	4	Hor	1	2⅛x1½	6.30	5.90	L	1.60-3200	1.35-3200	2.62-3200	18½	Y	Av	Mag	MV	Own	G	Rr
8B-H	Lawn Mowers	4	Hor	1	2⅛x1½	6.30	5.90	L	2.00-3600	1.70-3600	2.92-3600	19½	Y	Av	Mag	Car	Own	G	Rr
8	General Purpose	4	Ver	1	2½x2	7.95	5.40	L	2.50-3600	2.10-3600	3.70-3600	36	Y	MA	Mag	Car	Own	G	Rr
9	General Purpose	4	Ver	1	2½x2½	8.95	5.40	L	3.35-3600	2.80-3600	4.90-3600	61	Y	Me	Mag	Car	Own	G	HR
14	General Purpose	4	Ver	1	2½x2½	14.21	5.40	L	5.25-3600	4.40-3600	7.70-3600	76	Y	Me	Mag	Car	Own	G	HR
23	General Purpose	4	Ver	1	3x3½	22.97	5.40	L	8.40-3600	7.10-3600	12.30-3600	98	Y	Me	Mag	Car	Own	G	HR
Clinton — V5-200	General Purpose	2	Ver	1	1½x1½	4.56	6.20	L	1.60-3600	2.90-3200	4.40-3600	15½	Y	Av	Mag	Car	O-C	G	Rr
2100		4	Hor	1	2x1½	4.71	5.20	L	1.30-3600	1.20-3200	1.90-3600	35	Y	Av	Mag	Car	O-C	G	Rr
V5-2100		4	Ver	1	2x1½	4.71	5.20	L	1.30-3600	1.20-3200	1.90-3600	35	Y	Av	Mag	Car	O-C	G	Rr
V5-400	General Purpose	2	Ver	1	2½x1½	5.76	6.20		2.50-3600	2.90-3200	4.40-3600	15½	Y	Av	Mag	Car	O-C	G	Rr
V5-100, V5-700	General Purpose	4	Ver	1	2x1½	5.89	5.60	L	2.00-3600	1.80-3200	2.90-3600	38	Y	Av	Mag	Car	O-C	G	Rr
C-700		4	Hor	1	2x1½	5.89	5.60	L	2.00-3600	1.80-3200	2.90-3600	38	Y	Av	Mag	Car	O-C	G	Rr
V5-800	General Purpose	4	Ver	1	2½x1½	8.30	6.20	L	2.50-3600	1.80-3200	3.60-3600	40	Y	Av	Mag	Car	O-C	G	Rr
900		4	Hor	1	2½x1½	8.30	6.20	L	2.50-3600	1.80-3200	3.60-3600	42	Y	Av	Mag	Car	O-C	G	Rr
1200		4	Hor	1	2½x1½	8.30	6.20	L	3.60-3600	3.00-3200	4.40-3600	45	Y	Av	Mag	Car	O-C	G	Rr
1600	General Purpose	4	Hor	1	2½x2½	16.30	6.50	L	6.00-3200	6.00-3200	4.40-3600	76	Y	Fb	Mag	Car	Cart	G	Rr
2500	General Purpose	4	Hor	1	3½x3½	25.00	6.50	L	9.00-3200	9.05-3200	4.40-3600	104	Y	Fb	Mag	Car	Cart	G	Rr
Continental — AU7, AU7B	General Purpose	4	(c)	1	2½x2	7.10	5.70	L	2.00-3600	1.70-3600	3.02-3000	36	Y	MA	Mag	Car	CTZ	G	BR
AU7R	General Purpose†	4	(c)	1	2½x2	7.10	5.70	L	2.00-3600	1.70-3600	3.02-3000	41	Y	MA	Mag	Car	CTZ	G	BR
AD7, AW7	Lawn Mowers	4	Ver	1	2½x2	7.10	5.70	L	2.00-3600	1.70-3600	3.02-3000	41	Y	Av	Mag	Car	CTZ	G	BR
AU7B	General Purpose	4	(c)	1	2½x2	7.10	6.00	L	2.00-3600	1.70-3600	3.02-3000	36	Y	MA	Mag	Car	CTZ	G	BR
AU8, AU8B	General Purpose	4	(c)	1	2½x2	7.95	5.80	L	2.50-3600	2.12-3600	4.10-2600	36	Y	MA	Mag	Car	CTZ	G	BR
AU8R	General Purpose†	4	(c)	1	2½x2	7.95	5.80	L	2.50-3600	2.12-3600	4.10-2600	36	Y	MA	Mag	Car	CTZ	G	BR
AD8, AW8	Lawn Mowers	4	Ver	1	2½x2	7.95	5.80	L	2.50-3600	2.12-3600	4.10-2600	41	Y	Av	Mag	Car	CTZ	G	BR
AU8S	General Purpose	4	(c)	1	2⅝x2	8.40	6.00	L	3.00-3600	2.75-3600	4.50-2600	36	Y	MA	Mag	Car	CTZ	G	BR
AU8SR	General Purpose†	4	(c)	1	2⅝x2	8.40	6.00	L	3.00-3600	2.75-3600	4.50-2600	41	Y	MA	Mag	Car	CTZ	G	BR
AD8S, AW8S	Lawn Mowers	4	Ver	1	2⅝x2	8.40	6.00	L	3.00-3600	2.75-3600	4.50-2600	41	Y	Av	Mag	Car	CTZ	G	BR
Cushman — Husky-M6	General Purpose	4	Ver	1	2½x2½	12.30	4.70	L	3.00-3000	2.80-3000	5.20-2000	60	Y	Fb	Mag	Car	Til	G	R
Husky-M7	General Purpose	4	Ver	1	2½x2½	14.90	5.40	L	4.50-3000	3.80-3000	7.90-2000	65	Y	Fb	Mag	Car	Til	G	R
Husky-M8	General Purpose	4	Ver	1	2½x2½	17.80	5.90	L	5.00-3000	4.30-3000	9.50-2000	65	Y	Fb	Mag	Car	Til	G	R
Gladden — 40	General Purpose	4	Ver	1	2½x3	14.70	4.50	L	4.30-3200	4.30-3200	8.40-2200	79	Y	Fb	Mag	Car	MS	G,K	Rr
40M	Marine	4	Ver	1	2½x3	14.70	4.50	L	4.30-3200	4.30-3200	8.40-2200	80	Y	Fb	Mag	Car	MS	G	Rr
50	General Purpose	4	Ver	1	2½x3	14.70	5.70	L	5.25-3200	5.25-3200	9.20-2500	81	Y	Fb	Mag	Car	MS	G	Rr
75ME5	Marine	4	Ver	1	2½x3	19.40	5.70	L	6.50-3200	6.50-3200	11.00-3200	138	N		Mag	Car	MS	G	Ele
75E5	General Purpose	4	Ver	1	2½x3	19.40	5.70	L	6.50-3200	6.50-3200	11.00-3200	136	N		Mag	Car	MS	G	Ele
75M	Marine	4	Ver	1	2½x3	19.40	5.70	L	7.00-3200	7.00-3200	11.00-3200	86	N		Mag	Car	MS	G	Rr
75	General Purpose	4	Ver	1	2½x3	19.40	5.70	L	7.00-3200	7.00-3200	13.50-2200	83	Y	Fb	Mag	Car	MS	G,K	Rr
MC	Motorcycle	4	Ver	1	2½x3	19.40	6.00	L	9.50-5000	9.00-4600	12.30-3000	65	N		Mag	Car	Am	G	Pe
Homelite — 17	Chain Saws	2	Ver	1	2x1½	4.33			3.50-5000	3.50-5000		22	Y	Av	Mag	Car	O-T	G	Hc
20	GS,Pu,Ca,Bl	2	Ver	1	2½x1½	6.70	5.50	(a)	3.50-3600	3.50-3600		28	Y	Va	Mag	Car	Til	G,K	Hc
5-30N	Chain Saws	2	Ver	1	2½x1½	6.67	6.00	(a)	5.50-5200	5.50-5200		29	Y	Ce	Mag	Car	Til	G	Hc
23	GS,Pu,Bl	2	Ver	1	2½x2½	8.40	5.50	(a)	4.00-3600	4.00-3600		30	Y	Va	Mag	Car	Own	G,K	Hc
24	General Purpose	2	Ver	1	2½x2½	11.40	5.50	(a)	6.00-3600	6.00-3600		40	Y	Va	Mag	Car	O-Z	G,K	Hc
32	Generator Sets	2	Ver	1	3x3	21.21	5.50	(a)	10.00-3600			125	Y	Va	Mag	Car	Own	G,K	Hc
Jacobsen — J100	Lawn Mowers	2	Hor	1	2x1½	4.70	5.50		1.63-3600	1.50-3600	1.40-3600	19½	Y	Av	Mag	Car	Til	G	Rc
J100V	Lawn Mowers	2	Ver	1	2x1½	4.70	5.50		1.63-3600	1.50-3600	1.40-3600	19½	Y	Av	Mag	Car	Til	G	Rc
J200	Lawn Mowers	2	Hor	1	2x2	6.28	5.66		2.43-3600	2.20-3600	3.55-3600	46	Y	Av	Mag	Car	Til	G	Rc
J200V	Lawn Mowers	2	Ver	1	2x2	6.28	5.66		2.43-3600	2.20-3600	3.55-3600	46	Y	Av	Mag	Car	Til	G	Rc
Kohler — K90	General Purpose	4	Ver	1	2½x2	8.86	6.00	L	3.00-3600	3.10-3600	5.00-3000	41	Y	Fb	Mag	Car	Cart	G	Rr
K160	General Purpose	4	Ver	1	2½x2½	16.22	6.00	L	6.00-3600	5.40-3600	11.20-2400	67	Y	Fw	Mag	Car	Cart	G	Err
K330	General Purpose	4	Ver	1	3½x3½	33.00	6.50	L	11.00-3200		21.40-2200	165	Y	Fw	Mag	Car	Cart	G	ER
K660	General Purpose	4	Op	2	3½x3½	67.20	6.00	L	20.00-3600	22.70-3600	43.00-1800	225	Y	Fw	Mag	Car	Cart	G	HE
Lauson — R	Lm,Pu	4	Hor	1	2x1½	5.90	5.80	L	2.00-3600	1.50-3600	2.90-3600	37	Y	Fb	Mag	Car	Til	G	BP
5SA-400, 5SA-420	General Purpose	4	Ver	1	2x1½	5.90	5.80	L	2.00-3600	1.50-3600	2.90-3600	33	Y	Fb	Mag	Car	Til	G	R
RSH-737, 5SAB-600	General Purpose	4	Ver	1	2x1½	5.90	5.80	L	2.00-3600	1.50-3600	2.90-3600	28	Y	Fb	Mag	Car	Til	G	R
RSH-798	General Purpose†	4	Ver	1	2x1½	5.90	5.80	L	2.00-3600	1.50-3600	2.90-3600	43	Y	Fb	Mag	Car	Til	G	R
V-1	Lawn Mowers	4	Hor	1	2x1½	5.90	5.80	L	2.00-3600	1.50-3600	2.90-3600	31	Y	Fb	Mag	Car	Til	G	R
RSV-808	Lawn Mowers	4	Hor	1	2x1½	5.90	5.80	L	2.00-3600	1.50-3600	2.90-3600	33	Y	Fb	Mag	Car	Til	G	R
SLV	Marine	4	Hor	1	2½x1½	8.29		L	2.00-			19½			Mag	Car		G	R
TLV-900	Lawn Mowers	4	Hor	1	2½x2½	8.96	5.80	L	3.00-3200	2.80-3200	4.70-3200	56	Y	Fb	Mag	Car	Til	G	R
TLH-725	General Purpose	4	Ver	1	2½x2½	8.96	5.80	L	3.30-			52	Y	Fb	Mag	Car	Til	G	R
TLH-661	General Purpose†	4	Ver	1	2½x2½	8.96	5.80	L	3.30-			65	Y	Fb	Mag	Car	Til	G	R
P-25	General Purpose	4	Ver	1	2½x2½	17.06	6.30	L	6.30-3600	5.50-3600	9.50-3000	65	Y	Fb	Mag	Car	Til	G	BP
P-27	General Purpose†	4	Ver	1	2½x2½	17.06	6.30	L	6.30-3600	5.50-3600	9.50-3000	103	Y	Fb	Mag	Car	Til	G	BP
McCulloch — 33-B	Chain Saws	2	Ver	1	1½x1½	3.38	7.20	Re	2.20-9600		2.60-4000	20	N		Mag	Car	Own	G	AR
47	Chain Saws	2	Ver	1	2x1½	4.71	7.00	(a)	3.30-5000		4.60-4000	30	Y	Os	Mag	Car	Own	G	AR
4-30A	Chain Saws	2	Ver	1	2½x1½	8.30	6.75	(a)	4.60-4000		5.80-4800	31	Y	Os	Mag	Car	Own	G	AR
99	Pu,Ca,ED	2	Hor	1	2½x2	9.82	6.50	(a)	8.00-5200		11.80-3600	56	Y	Ce	Mag	Car	Own	G	AR
Onan — AK	Generator Sets	4	Ver	1	2½x2½	12.28	5.50	L					Y	(b)	Mag	Car	Cart	G	HE
AJ	Generator Sets	4	Ver	1	2⅝x2½	14.90	6.25	L	5.10-3600	2.30-1800	8.00-2100		Y	(b)	Mag	Car	Cart	G	BP
BH	GS,In	4	Op	2	2½x2½	22.10	6.23		6.70-3000	5.30-3000	12.00-3000	95	Y	(b)	BM	Car	MS	G	ER
LM	Generator Sets	4	Ver	1	3½x3	24.88	5.64	L	5.10-1800	4.34-1800	14.90-1800		Y	(b)	Mag	Car	Cart	G	HE
CK	General Purpose	4	Op	2	3x2½	39.80	6.29	L	10.10-3000	8.80-3000	10.00-3000	95	Y	(b)	BM	Car	MS	NpG	ER
ACK	Generator Sets	4	Op	2	3x2½	39.80	6.25	L	13.80-3600	10.00-3600	20.00-3600	125	Y	Mc	Mag	Car		G	R
VB	Generator Sets	4	Vee	2	3½x2½	45.70	6.25	I	19.25-3600	16.20-3600	29.80-2800	140	Y	Mc	Mag	Car	Zen	G	Ele

For Directory of the Engine Manufacturers listed above, see page 263

★ ★ ★ ★ ★ SMALL

MAKE AND MODEL	Designed for Use	Number of Cycles	ENGINE: Type	No. of Cylinders	Bore and Stroke (In.)	Total Displacement (Cu. In.)	Compression Ratio (to —1)	Valve Location	Horsepower: Rated at RPM	Horsepower: Continuous at RPM	Torque—Lb. Ft. at RPM	Weight (Lb.)	GOVERNOR: Used	GOVERNOR: Type	Ignition System Type	FUEL SYSTEM: Type	FUEL SYSTEM: Make	Fuel Used	Starting Method
AIR COOLED—Continued																			
Onan—Cont'd CCK	General Purpose	4	Op	2	3¼x3	49.80	5.58	L	13.80-3000	11.50-3600	27.80-1800	129	Y	(b)	Mag	Car	MS	G	HE
CW	Generator Sets	4	Op	2	4x3½	88.00	5.50	L	20.00-1800	16.50-1800	58.30-1800	420	Y	Fb	Mag	Car	Zen	G	HE
Power Products AV36-2032	General Purpose	2	Ver	1	1¾x1½	3.00	.....	Re	1.30-3400	1.30-3400	1.92-3100	12¾	Y	Fb	Mag	Car	Tll	G	R
AH36-1007	General Purpose	2	Hor	1	1¾x1½	3.00	.....	Re	1.30-3400	1.30-3400	1.92-3100	14¾	Y	Fb	Mag	Car	Tll	G	R
AV36-2033	General Purpose	2	Ver	1	1¾x1½	3.00	.....	Re	1.40-3200	1.40-3200	2.00-3200	15	Y	Fb	Mag	Car	Tll	G	AR
AH36-1008	General Purpose	2	Hor	1	1¾x1½	3.00	.....	Re	1.40-3200	1.40-3200	2.00-3200	17	Y	Fb	Mag	Car	Tll	G	AR
AV47-2034	General Purpose	2	Ver	1	2x1½	4.70	.....	Re	1.90-3600	1.90-3600	2.67-3400	13	Y	Fb	Mag	Car	Tll	G	R
AH47-1009	General Purpose	2	Hor	1	2x1½	4.70	.....	Re	1.90-3600	1.90-3600	2.67-3400	15	Y	Fb	Mag	Car	Tll	G	R
AV47-2035	General Purpose	2	Ver	1	2x1½	4.70	.....	Re	1.80-3200	1.80-3200	2.92-3400	16½	Y	Fb	Mag	Car	Tll	G	AR
AH47-701	General Purpose	2	Hor	1	2x1½	4.70	.....	Re	1.80-3200	1.80-3200	2.92-3400	17	Y	Fb	Mag	Car	Tll	G	AR
AV47-1010	General Purpose	2	Hor	1	2x1½	4.70	.....	Re	1.80-3200	1.80-3200	2.92-3400	17¼	Y	Fb	Mag	Car	Tll	G	AR
BV60-319A	General Purpose	2	Op	2	1¾x1⅞	6.08	.....	Re	2.00-3400	2.00-3400	2.83-3000	25½	Y	Fb	Mag	Car	Tll	G	R
BH60-325A	General Purpose	2	Op	2	1¾x1⅞	6.08	.....	Re	2.30-3600	2.30-3600	2.50-2900	25½	Y	Fb	Mag	Car	Tll	G	R
BV60-361	General Purpose	2	Op	2	1¾x1⅞	6.90	.....	Re	2.30-3300	2.30-3300	2.50-3400	27½	Y	Fb	Mag	Car	Tll	G	R
BH60-364	General Purpose	2	Op	2	1¾x1⅞	6.90	.....	Re	2.30-3300	2.30-3300	2.50-3400	27¾	Y	Fb	Mag	Car	Tll	G	R
AV80-407	General Purpose	2	Ver	1	2½x2	8.00	.....	Re	3.40-3400	3.40-3400	5.50-3000	23½	Y	Fb	Mag	Car	Tll	G	R
AH80-410	General Purpose	2	Hor	1	2½x2	8.00	.....	Re	3.40-3400	3.40-3400	5.50-3000	26	Y	Fb	Mag	Car	Tll	G	AR
Reo 4000J	Lawn Mower	...	Hor	1	2x1¾	5.50	5.22	L	1.75-4000	1.40-3400	2.32-2400	28	Y	Av	Mag	Car	Cart	G	R
3340J	Lawn Mower	4	Hor	1	2¼x1⅞	6.65	5.70	L	2.25-4000	1.95-3600	3.21-3400	29	Y	Av	Mag	Car	Cart	G	R
3300J	Lawn Mower	...	Hor	1	2¼x1⅞	6.65	5.70	L	2.25-4000	1.95-3600	3.21-3400	29	Y	Av	Mag	Car	Cart	G	AR
3600J	Lawn Mower	4	Ver	1	2¼x1⅞	6.65	5.70	L	2.25-4000	1.95-3600	3.21-3400	29	Y	Av	Mag	Car	Cart	G	R
3310J, 3350J	Lawn Mower	4	Hor	1	2¼x1⅞	6.65	5.70	L	2.25-4000	1.95-3600	3.21-3400	30	Y	Av	Mag	Car	Cart	G	AR
3320J	Snow Plow	4	Hor	1	2¼x1⅞	6.65	5.70	L	2.25-4000	1.95-3600	3.21-3400	30	Y	Av	Mag	Car	Cart	G	AR
3330J	Lawn Mower	4	Ver	1	2¼x1⅞	6.65	5.70	L	2.25-4000	1.95-3600	3.21-3400	30	Y	Av	Mag	Car	Cart	G	AR
MW-3810J	Lawn Mower	...	Hor	1	2¼x1⅞	6.65	5.70	L	2.25-4000	1.95-3600	3.21-3400	30	Y	Av	Mag	Car	Cart	G	AR
United 1½ HP	General Purpose	4	Ver	1	2⅝x2¼	11.06	.....	L	.....	.....	.....	70	Y	.....	Mag	Car	Tll	G	Pe
2 HP	General Purpose	4	Ver	1	2⅝x2¼	12.53	.....	L	.....	.....	.....	70	Y	.....	Mag	Car	Tll	G	Pe
4 HP	General Purpose	4	Ver	1	2⅝x2½	14.89	.....	L	.....	.....	.....	75	Y	.....	Mag	Car	Tll	G	Pe
West Bend 2755	GS,Ac,Pu,Af	2	Hor	1	1¾x1⅞	3.76	.....	Re	1.50-3600	1.50-3600	2.30-3600	17½	Y	Av	Mag	Car	Tll	G	R
2700	Lawn Mowers	2	Ver	1	1¾x1⅞	3.76	.....	Re	1.50-3600	1.50-3600	2.30-3600	18½	Y	Av	Mag	Car	Tll	G	R
2703	Lawn Mowers	2	Ver	1	1¾x1⅞	3.90	.....	Re	1.50-3600	1.50-3600	2.30-3600	18	Y	Av	Mag	Car	.....	G	Rr
2777	GS,Ac,Pu,Af	2	Hor	1	2x1⅞	4.98	.....		2.30-3600	2.30-3600	3.60-3600	17½	Y	Av	Mag	Car	Tll	G	R
2722	Lawn Mowers	2	Ver	1	2x1⅞	5.10	.....	Re	2.30-3600	2.30-3600	3.60-3600	18	Y	Av	Mag	Car	Tll	G	R
2774	Chain Saws	2	Hor	1	2x1⅞	5.10	.....	Re	2.80-4000	2.80-4000	3.80-4000	15	N	.....	Mag	Car	Tll	G	Rc
Wisconsin ABN	General Purpose	4	Ver	1	2⅛x2⅝	13.50	5.66	L	4.80-3600	3.70-3600	7.90-2400	77	Y	Ce	Mag	Car	MS	G	R
AKN	General Purpose	4	Ver	1	2⅛x2⅝	17.00	5.66	L	6.20-3600	4.96-3600	10.40-2400	77	Y	Ce	Mag	Car	MS	G	R
AEH	General Purpose	4	Ver	1	3x3½	23.00	5.34	L	6.10-2600	4.90-2600	13.00-2000	130	Y	Ce	Mag	Car	Zen	G	R
AEN	General Purpose	4	Ver	1	3x3½	23.00	5.34	L	9.20-3600	6.90-3600	15.40-2200	110	Y	Ce	Mag	Car	Zen	G	R
AFH	General Purpose	4	Ver	1	3½x4	33.20	4.60	L	7.20-2200	5.70-2200	19.80-1400	180	Y	Ce	Mag	Car	Zen	G	Hc
AGH	General Purpose	4	Ver	1	3½x4	38.50	4.60	L	8.40-2200	6.70-2200	24.20-1400	180	Y	Ce	Mag	Car	Zen	G	Hc
AHH	General Purpose	4	Ver	1	3½x4	41.30	4.60	L	9.20-2200	7.40-2200	25.80-1300	180	Y	Ce	Mag	Car	Zen	G	Hc
TE	General Purpose	4	Ver	2	3x3½	45.90	5.44	L	11.20-2600	9.00-2600	27.10-1600	220	Y	Ce	Mag	Car	Zen	G	Hc
TF	General Purpose	4	Ver	2	3½x3½	53.90	5.50	L	14.60-2600	11.68-2600	32.50-1700	220	Y	Ce	Mag	Car	Zen	G	Hc
TFD	General Purpose	4	Ver	2	3½x3½	53.90	5.50	L	16.00-3000	12.00-2600	32.50-1700	220	Y	Ce	Mag	Car	Zen	G	Hc
WATER COOLED																			
Cushman Cub R-14	General Purpose	4	Hor	1	3¼x4½	37.33	4.50	L	3.00-850	3.00-850	10.40-600	195	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
Cub R-20	General Purpose	4	Hor	1	3½x4½	43.29	4.10	L	3.70-850	3.70-850	22.50-700	235	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
Cub R-30	General Purpose	4	Hor	1	3¾x4½	49.70	4.64	L	4.50-850	4.50-850	28.40-800	245	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
Cub R-40	General Purpose	4	Hor	1	4x4½	56.50	5.10	L	5.40-850	5.40-850	35.00-800	256	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
Kermath Sea Pup	Marine	4	Ver	1	2⅝x2⅝	18.00	6.00	L	5.00-3200	.....	10.00-2700	60	Y	Ce	Mag	Car	Tll	G	ER
Sea Twin	Marine	4	Ver	2	2⅝x2½	30.00	6.20	L	10.00-3000	.....	19.00-2700	100	Y	Ce	Mag	Car	Tll	G	ER
United 2R14	Af	4	Hor	1	3¼x4½	37.30	.....	L	.....	.....	.....	195	Y	(d)	Mag	Car	Tll	G,K,D	Hc
3R20	Af	4	Hor	1	3½x4½	43.25	.....	L	.....	.....	.....	235	Y	(d)	Mag	Car	Tll	G,K,D	Hc
4R30	Af	4	Hor	1	3¾x4½	49.75	.....	L	.....	.....	.....	245	Y	(d)	Mag	Car	Tll	G,K,D	Hc
Universal AFTC	Generator Sets	4	Ver	2	3x3½	49.50	5.79	L	5.00-1200	6.00-1350	25.00-1200	280	Y	Me	BM	Car	Str	G	HE
AFC	GS,In	4	Ver	4	3x3½	99.00	5.79	L	19.00-1600	18.00-1600	53.00-1600	.....	Y	Me	BM	Car	Str	G,Ng	HE

ABBREVIATIONS

†—Reduction gear model.
(a)—Rotary intake valve in crankcase.
(b)—Flyweights on camshaft.
(c)—Inclined 20° up from horizontal.
(d)—Automatically controlled by flywheel.
Ac—Air compressors.
Af—Auxiliary farm implement equipment.
Am—Amal.
AR—Automatic rewinding recoil.
Av—Air vane.
Bl—Blowers.
BM—Battery and magneto.
BP—Belt or pulley.
BR—Belt, pulley or recoil.
Car—Carburetor.
Cart—Carter Carburetor Corp.
Ce—Centrifugal.
Ch—Chain saws.
CTZ—Carter, Tillotsen or Zenith.
D—Distillate.
ED—Earth drills.
Ele—Electric.
ER—Electric or rope.
Err—Electric, recoil or rope.
Fb—Flyball.
Fw—Flyweight.
G—Gasoline.
GS—Generator sets.
Hc—Hand crank.
HE—Hand crank or electric.
Hor—Horizontal.
HR—Hand crank or rope.
I—Valves in head.
In—Industrial.
K—Kerosene.
L—"L" head, valves at side.
Lm—Lawn mowers.
MA—Mechanical or air vane.
Mag—Magneto.
Me—Mechanical.
MS—Marvel-Schebler Carburetor Div.
MV—Mixing valves.
N—No or none.
Ng—Natural gas.
NgG—Combination of natural gas and gasoline.
O-C—Own or Carter.
Op—Opposed.
Os—Over speed.
O-T—Own and Tillotsen.
O-Z—Own and Zenith.
Pe—Pedal.
Pu—Pumps.
R—Rope.
Rc—Recoil.
Re—Reed valves.
Rr—Recoil or rope.
Str—Stromberg Carburetor Div.
Tll—Tillotsen Mfg. Co.
Va—Valve.
Vee—"V" type engine.
Ver—Vertical.
Y—Yes.
Zen—Zenith Carburetor Div.

For Directory of the Engine Manufacturers listed above, see page 263

1955 U.S. OUTBOARD MOTORS

MAKE AND MODEL	Power Head	Number of Cylinders	Cylinder Material	Bore and Stroke (In.)	Piston Displacement (Cu. In.)	Engine Type	Brake Hp. at R.P.M. O.B.C. Rating	Engine Weight (Lb.) Fully Equipped	Piston Rings — Number and Width	Propeller: Diameter (In.)	Propeller: Pitch	Propeller: Right or Left Hand Rotation	Propeller: Number of Blades	Starting Device	Fuel Tank Capacity (Pts.)	Gear: Ratio	Gear: Tooth Pitch	Gear: Material (S.A.E. No.)	Gearcase Bearing	Magneto Make	Carburetor: Make	Carburetor: Size (In.)	Carburetor: Starting Mixture Obtained by—	Spark Plug Make and Model	Bearings: Main	Bearings: Connecting Rod	Cooling System	Reverse	Lubrication—Pints Oil to 1 Gal. Gasoline
Champion* 2MM		1		2 1/16 x 1 3/4	5.84	S	3.5-4300	42		7 1/2	6		2	RR	10									Ch-7				No	
3MM-G5		2		1 7/16 x 1 3/4	9.86	AF	5.5-4300	44*		7 1/2	9		2	RR	28•									Ch-J7J				Yes	
4MM-G5		2		1 7/16 x 1 3/4	9.86	AF	7.5-4300	46•		7 1/2	9 1/2		2	RR	28♣									Ch-J7J				Yes	
4MM-HR		2		1 7/16 x 1 3/4	9.86	AF		36		5	9		2	Re	20									Ch-J3				No	
6MM-G5, 8MS-G5		2		2 1/16 x 2 1/16	19.94	AF	16.5-4300†	54		8	11		3	RR	48‡									Ch-J6J				Yes	
6MM-HR		2		2 1/16 x 2 1/16	19.94	AF		46		7	13 1/2		2	Re	48‡									Ch-J3				No	
Elgin 571-58212	Re-2 Port	1	ACS	1 3/4 x 1 3/4	3.91	S	2.0-4000	29 1/2	3-1/8	6 1/2	4	L	2	RR	5	14-21	12.00	4140	PI	Wico	Til	1/2	C	Ch-J11J	PI	PI	Air	No*	
571-58571	Re-2 Port	2	ACS	2 x 1 1/4	10.60	AF	5.0-4000	51	3-1/8	7 1/2	7	L	2	RR	8 1/2	14-21	12.00	4140	PI	Wico	Til	1/2	C	Ch-J12J	PA	A	VP	Yes*	
571-58711	Re-2 Port	2	ACS	2 1/16 x 1 1/4	11.97	AF	7.5-4000	47	3-1/8	7 1/2	8	L	2	RR	11	14-21	12.00	4140	PI	Wico	Til	1/2	C	Ch-J11J	PA	A	VP	No*	
571-58772	Re-2 Port	2	ACS	2 1/16 x 1 1/4	11.97	AF	7.5-4000	52	3-1/8	7 1/2	9 1/2	L	2	RR	11	14-21	12.00	4140	PI	Wico	Til	1/2	C	Ch-J11J	PA	A	VP	Yes*	
571-58901	Re-2 Port	2	ACS	2 5/16 x 2	17.72	AF	12.0-4000	58	3-1/8	8 1/2	8	R	3	RR	48‡	14-21	10.00	4140	PA	Wico	Til	3/4	C	Ch-H10J	A	PA	VP	Yes	
571-59401	Re-2 Port	2	ACS	3 x 2 5/16	37.71	AF	25.0-4000	110	3-1/8	10 5/8	11	R	3	ER	48‡	13-21	8.00	4140	A	FM	Til	1 1/16	C	Ch-H8J	A	PA	VP	Yes	
Evinrude 3014, 3016	Re-2 Port	2	ACS	1 7/16 x 1 3/4	5.27	AF	3.0-4000	32	2-1/8	6 1/2	5 3/4	L	3	RR	6	12-20	11.20	4615	PI	Own	Own	3/8	C	(a)	PI	PI		Yes	
7518	Re-2 Port	2	ACS	2 1/16 x 1 3/4	12.40	AF	7.5-4000	49	3-1/8	8	8 1/2	R	2	RR	32‡	12-21	10.00	4615	PI	Own	Own	7/8	C	(a)	PI	PI		Yes	
15014	Re-2 Port	2	ACS	2 5/16 x 2 1/4	19.94	AF	15.0-4000	75	3-1/8	9	11	R	3	RR	48‡	12-21	8.97	4615	PI	Own	Own	7/8	C	(a)	PA	A		Yes	
25010	Re-2 Port	2	ACS	2 1/16 x 2 1/16	35.70	AF	25.0-4000	113	3-1/8	10 1/2	12 1/2	R	3	RR	48‡	12-21	7.50	4615	A	Own	Own	1 1/16	C	(a)	A	A		Yes	
25020	Re-2 Port	2	ACS	2 1/16 x 2 1/16	35.70	AF	25.0-4000	129	3-1/8	10 1/2	12 1/2	R	3	Ele	48‡	12-21	7.50	4615	A	Own	Own	1 1/16	C	(a)	A	A		Yes	
Flambeau 125520	3 Port	1	CI	1 1/2 x 1 1/2	4.62	S	2.5-4000	29	3-1/8	7	6	L	2	RR	6	13-24	12.00	1315	PI	Eis	Own		C	Ch-J7J	PI	PI	IIP	No	
174060	3 Port	2	CI	1 1/2 x 1 1/2	9.24	AF	5.0-4000	36	3-1/8	8	8 1/2	L	2	RR	6	13-24	12.00	1315	PI	Eis	Own		C	Ch-J7J	PI	PI	RP	No	
Johnson JW	Re-2 Port	2	ACS	1 7/16 x 1 3/4	5.28	AF	3.0-4000	32	2-1/8	6 1/2	5 3/4	L	3	RR	5	17-28	15.58	4615	PI	Own	Own	3/8	C	Ch-J6J	PI	PI		Yes	
CD	Re-2 Port	2	ACS	1 1/2 x 1 1/2	8.94	AF	5.5-4000	47	3-1/8	8	7 1/4	R	2	RR	32‡	15-26	12.39	4615	PI	Own	Own	3/8	C	Ch-J6J	PI	PI	VP	Yes	
QD	Re-2 Port	2	ACS	2 5/16 x 1 7/8	16.80	AF	10.0-4000	70	3-1/8	9	8	R	3	RR	48‡	12-21	8.97	4615	PA	Own	Own	7/8	C	Ch-J6J	A	A		Yes*	
RD	Re-2 Port	2	ACS	2 1/16 x 2 1/16	35.70	AF	25.0-4000	114	3-1/8	10 1/2	12 1/2	R	3	RR	48‡	12-21	7.50	4615	A	Own	Own	1 1/16	C	Ch-J6J	A	A	VP	Yes*	
RDE	Re-2 Port	2	ACS	2 1/16 x 2 1/16	35.70	AF	25.0-4000	120	3-1/8	10 1/2	12 1/2	R	3	Ele	48‡	12-21	7.50	4615	A	Own	Own	1 1/16	C	Ch-J6J	A	A		Yes*	
Lawson 5353	Pop-2 Port	1	CI	2 1/16 x 1 7/8	6.55	S	3.0-4000	44	3-	7 1/2	6	L	2	RR	5	12-22			PI	Wico	Til		C	Ch-J8	A	PI	Air	No	No
T653	Pop-2 Port	2	CI	2 1/16 x 1 7/8	13.30	AF	6.0-4000	57	3-	7 1/2	7 1/2	L	2	RR	10	13-21			PI	Wico	Til		C	Ch-J8			Air	No	No
T653N	Pop	2	CI	2 1/16 x 1 7/8	13.30	AF	6.0-4000	56	3-	7 1/2	7 1/2	L	2	RR	10	13-21			PI	Wico	Til		C	Ch-J6	PI	PI	Air	Neu	No
Mercury** 5		2		1 5/8 x 1 1/2	7.20	AF	5.0-4200	40						RR	10				A		Til				A	A		Neu	
6		2		1 5/8 x 1 1/2	7.20	AF	5.0-4500	42						RR	26‡				A		Til				A	A		No	
7		2		2 x 1 5/8	11.00	AF	7.5-4000	54						RR	12				A		Til				A	A		Yes*	
20		2		2 1/16 x 2 1/16	19.80	AF	16.0-4000	73						RR	48‡				A		Til				A	A		Yes*	
25		2		2 1/16 x 2 1/16	19.80	AF	18.0-4500	75						RR	48‡				A		Til				A	A		Yes*	
25E		2		2 1/16 x 2 1/16	19.80	AF	18.0-4500	85						ER	48‡				A		Til				A	A		Yes*	
55		4		2 1/16 x 2 1/16	39.60	AF	40.0-5400	111						RR	48‡				A		Til		C		A	A		Yes*	
55E		4		2 1/16 x 2 1/16	39.60	AF	40.0-5400	120						ER	48‡				A		Til		C		A	A			
Oliver J	Re-2 Port	2	ACS	2 x 1 1/2	9.42	AF	5.5-4000	63	2-1/8	8 1/4	8	L	2	RR	28	14-25	12.00	8615	PA	Scin	Til	3/4	C	Ch-J8J	PI	PI	Fvr	Yes*	
K	Re-2 Port	2	ACS	2 1/16 x 2 1/16	19.94	AF	15.0-4000	79	2-1/8	8 1/4	11	L	2	RR	52	14-25	12.00	8615	PA	Scin	Til	1	C	Ch-J7J	A	A	Fvr	Yes*	
Scott-Atwater†† 3058	Re-2 Port	1	ACS	2 1/16 x 1 3/4	6.21	S	3.6-4000	39	2-1/16	7 1/2	6	R	2	RR	6	13-21	12.58	8640	PA	Phe	Til	3/4	C	Ch-H10J	PI	PA	RP	No	
3758	Re-2 Port	2	ACS	1 1/2 x 1 1/2	7.48	AF	5.0-4200	48	2-1/8	7 1/2	6	L	2	RR	28‡	13-21	10.75	8640	PA	Wico	Til	1	C	Ch-H10J	PA	PA	Fvr	Yes*	
3358	Re-2 Port	2	ACS	2 x 1 3/4	11.00	AF	7.5-4200	49	2-1/8	8	7	L	2	RR	48‡	13-21	10.75	8640	PA	Phe	Til	1	C	Ch-H10J	PI	PA	Fvr	Yes*	
3058	Re-2 Port	2	ACS	2 1/16 x 2	14.32	AF	10.0-4200	58	3-1/8	7 1/2	9 1/2	L	2	RR	48‡	13-21	10.75	8640	PA	Wico	Til	1	C	Ch-H10J	PA	PA	Fvr	Yes*	
3958	Re-2 Port	2	ACS	2 1/16 x 2 1/16	19.95	AF	16.0-4200	79	3-1/8	9	9	R	2	RR	48‡	17-23	10.00	8640	A	Wico	Til	1	C	Ch-5MJ	A	PA	Fvr	Yes*	
3068	Re	2	ACS	3 1/16 x 2 5/16	40.51	AF	32.7-4200	115	3-1/8	10	14	L	2	ER	48	13-22	8.00	8640	A	Phe	Til	1 1/16	C	Ch-H10	A	A	VP	Yes	

ABBREVIATIONS

*—Similar models produced under trade names of Majestic and Voyager.
†—Majestic and Voyager, 15.0-4300.
•—Majestic and Voyager, 46.
■—Majestic and Voyager, 47.
●—Majestic and Voyager, 10.
♣—Majestic, 10; Voyager, 12.
‡—Separate gas tank.
§—Includes neutral.
**—Material secured from manufacturer's brochure.
††—Similar models produced under trade names of Corsair and Firestone.
(a)—Champion J6J or AutoLite A3X.
A—Antifriction.
ACS—Aluminum with cast iron sleeves.
AF—Alternate firing.
C—Choke.
Ch—Champion Spark Plug Co.
CI—Cast iron.
Eis—Eiseman (Jack & Heintz Precision Ind.).
Ele—Electric.
ER—Electric and rewinding rope.
FM—Fairbanks Morse & Co.
Fvr—Flexible vane rotor.
L—Left.
Neu—Neutral.
PA—Plain and antifriction.
Phe—R. E. Phelon Co.
PI—Plain.
Pop—Poppet valve.
R—Right.
Re—Reed valve.
Ro—Rope.
RP—Rotary pump.
RR—Rewinding rope.
S—Single.
Scin—Scintilla Magneto Div.
Til—Tillotsen Mfg. Co.
VP—Vane pump.
Wico—Wico Electric Co.

For Directory of the Engine Manufacturers listed above, see page 263. Data on production of Outboard Motors will be found on page 250

DIRECTORY OF MANUFACTURERS

Following are the company names and addresses of manufacturers whose products are listed in the tables of specifications of complete motor vehicles, tractors, aircraft, industrial trucks, and all types of gasoline and Diesel engines.

U. S. PASSENGER CARS

For details of their products see pages 123-141.

American Motors Corp., Detroit 32, Mich.
BUICK Motor Div., General Motors Corp., Flint 2, Mich.
CADILLAC Motor Car Div., General Motors Corp., Detroit 32, Mich.
CHEVROLET Div., General Motors Corp., Detroit 2, Mich.
CHRYSLER Sales Div., Chrysler Corp., Detroit 31, Mich.
DE SOTO Div., Chrysler Corp., Detroit 31, Mich.
DODGE Div., Chrysler Corp., Detroit 31, Mich.
FORD Div., Ford Motor Co., Dearborn, Mich.
HUDSON, see American Motors Corp.
LINCOLN-MERCURY Div., Ford Motor Co., Detroit 32, Mich.
MERCURY, see Lincoln-Mercury Div., Ford Motor Co.
NASH, see American Motors Corp.
NASH-HUDSON, see American Motors Corp.
OLDSMOBILE Div., General Motors Corp., Lansing 21, Mich.
PACKARD Div., Studebaker-Packard Corp., Detroit 32, Mich.
PLYMOUTH Div., Chrysler Corp., Detroit 31, Mich.
PONTIAC Motor Div., General Motors Corp., Pontiac 11, Mich.
STUDEBAKER Div., Studebaker-Packard Corp., South Bend 27, Ind.
WILLYS Motors, Inc., Toledo 1, Ohio.

BRITISH PASSENGER CARS

For details of their products see pages 142-143.

A. C. Cars Ltd., Thames Ditton, Surrey, England.
A. F. N. Ltd., Isleworth, Middlesex, England.
ALLARD Motor Co., Ltd., London, S.W.4, England.
ALVIS Ltd., Coventry, England.
ARMSTRONG-SIDDELEY Motors, Ltd., Coventry, England.
ASTON MARTIN, see David Brown Tractors, Ltd.
AUSTIN Motor Co., Ltd., Longbridge, Birmingham, England.
AUSTIN-HEALEY, see Donald Healey Motor Co., Ltd.
BENTLEY, see Rolls-Royce, Ltd.
BRISTOL—See A.F.N. Ltd.
CITROEN Cars Ltd., Slough, Bucks, England.
DAIMLER Co., Ltd., Coventry, England.
David Brown Tractors, Ltd., Feltham, Middlesex, England.
DELLOW Motors, Ltd., Alvechurch, Birmingham, England.
Donald Healey Motor Co., Ltd., London W.1, England.
FORD Motor Company, Ltd., Dagenham, Essex, England.
FRAZER-NASH—See A.F.N. Ltd.
HILLMAN, see Rootes Group.
HUMBER, see Rootes Group.
JAGUAR Cars, Ltd., Coventry, England.
JENSEN Motors Ltd., West Bromwich, England.
LAGONDA, see David Brown Tractors, Ltd.
LANCHESTER, see Daimler Co., Ltd.
LEA-FRANCIS Cars, Ltd., Coventry, England.
M.G., see Nuffield Exports Ltd.
MORGAN Motor Co., Ltd., Malvern Link, Worcestershire, England.
MORRIS, see Nuffield Exports Ltd.
Nuffield Exports Ltd., Cowley, Oxford, England.
RILEY, see Nuffield Exports Ltd.
ROLLS-ROYCE, Ltd., London, W.1, England.
Rootes Group, Coventry, England.
ROVER Company Ltd., Solihull, Birmingham, England.
SINGER Motors, Ltd., Coventry & Birmingham, England.
STANDARD Motor Co., Ltd., Coventry, England.
SUNBEAM, see Rootes Group.
SWALLOW Coachbuilding Co., Ltd., Walsall, Staffs, England.
TRIUMPH—See Standard Motor Co.
VAUXHALL Motors Ltd., Luton, Bedfordshire, England.
WOLSELEY, see Nuffield Exports Ltd.

OTHER FOREIGN CARS

For details of their products see pages 143-145.

ARGENTINA

Industrias Aeronauticas y Mecanicas del Estado, Cordoba, Argentina.

AUSTRALIA

General Motors-HOLDEN'S Ltd., Melbourne, Australia.

AUSTRIA

Wolfgang DENZEL Co., Vienna, Austria.
STEYR-DAIMLER-PUCH, Steyr, Austria.

CZECHOSLOVAKIA

MOTOKOV, Praha 7, Czechoslovakia.

FRANCE

BUGATTI, Molsheim, Bas-Rhin, France.
Societe Anonyme Andre CITROEN, Paris XV, France.
HOTCHKISS-Delahaye, Paris, France.
S.A. des Anciens Etablissements PANHARD & Levassor, Paris 19, France.
S.A. des Automobiles PEUGEOT, Paris 8, France.
Regie Nationale des Usines RENAULT, Billancourt, Seine, France.
Robert de ROUIN, Paris 17, France.
Societe des Moteurs SALMSON, Billancourt, Seine, France.
Soc. Industrielle de Mecanique et Carrosserie Automobile (SIMCA), Paris, France.
Automobiles TALBOT-Darracq S.A., Seine, France.

GERMANY

AUTO UNION G.M.B.H., Dusseldorf, Germany.
Bayerische Motoren Werke Aktiengesellshaft, Munchen 13, Germany.
Carl F. W. BORGWARD, Bremen, Germany.
DAIMLER-BENZ A.G., Stuttgart-Unterurkheim, Germany.
Deutscher Innen-Und Aussenhandel Transportmaschinen, Berlin W8, Germany.
EMW, see Deutscher Innen-Und Aussenhandel Transportmaschinen.
FORD-Werke AG, Cologne, Germany.
GOLIATH-Werk G.M.B.H., Bremen 11, Osterdeich 222, Germany.
LLOYD Motoren Werke GMBH, Bremen, Vulkanstr., Germany.
MERCEDES-BENZ, see Daimler-Benz A.G.
Adam OPEL, Aktiengesellschaft, Russelsheim Am Main, Germany.
Dr. Ing. h.c. F. PORSCHE K.G., Stuttgart-Zuffenhausen, Germany.
VOLKSWAGENWERK GMBH, Wolfsburg, Germany.

ITALY

ALFA ROMEO, via M.U. Traiano, 33, Milano, Italy.
FERRARI, Modena, Italy.
FIAT, Turin, Italy.
ISO S.P.A. Autoveicoli, Milano, Italy.
LANCIA & Co., via Monginevro 99, Torino, Italy.
Officiene Alfieri MASTERATI, Modena, Italy.
NARDI & Co., Torino, Italy.
Automobili O.S.C.A., Bologna, Italy.

JAPAN

NISSAN Motor Co., Ltd., Kanagawa, Yokohoma, Japan.
OHTA Motor Co., Ltd., Higashi-Shinagawa, Shinagawa-ku, Tokyo, Japan.
TOYOTA Motor Co., Ltd. (Toyopet), Koromo-shi, Aichi-Ken, Japan.

SPAIN

Centro de Estudios Technicos de Automocion (Pegaso), Padilla 39, Madrid, Spain.

SWEDEN

Svenska Aeroplan Aktiebolaget (SAAB), Trollhattan, Sweden.
Aktiebolaget VOLVO, Goteberg 1, Sweden.

TRUCKS

For details of their products see pages 147-153.

The American-COLEMAN Co., Omaha 2, Neb.
AUTOCAR Div., White Motor Co., Exton, Penna.
AVAILABLE Truck Co., Chicago 47, Ill.
BIEDERMAN Motors Corp., Cincinnati 14, Ohio.
BROCKWAY Motor Co., Inc., Cortland, N. Y.
CHEVROLET Motor Div., General Motors Corp., Detroit 2, Mich.
COLEMAN, see American-Coleman Co.
DIAMOND T Motor Car Co., Chicago 23, Ill.
DIVCO Corp., Detroit 5, Mich.
DODGE Div., Chrysler Corp., Detroit 31, Mich.
DUPLEX Truck Co., Lansing 4, Mich.
FORD Div., Ford Motor Co., Dearborn, Mich.
Four Wheel Drive Auto Co. (F.W.D.), Clintonville, Wis.
KENWORTH Motor Truck Corp., Seattle 11, Wash.
MARMON-HERRINGTON Co., Inc., Indianapolis 7, Ind.
Northwestern Auto Parts Co. (NAPCO), Minneapolis 11, Minn.
OSHKOSH Motor Truck, Inc., Oshkosh, Wis.
PETERBILT Motors Co., Oakland 5, Calif.
REO Motors, Inc., Lansing 20, Mich.
STUDEBAKER Corp., South Bend 27, Ind.
TRUCKSTELL Mfg. Co., Cleveland 14, Ohio.
WALTER Motor Truck Co., Ridgewood, L. I., N. Y.
WARD LA FRANCE Truck Corp., Elmira Heights, N. Y.
WHITE-FREIGHTLINER Div., White Motor Co., San Francisco 7, Cal.
WILLYS Motors, Inc., Toledo 1, Ohio.

(Turn to Page 478, Please)

WAUKESHA

THE PAYLOAD POWER PLANT—

GASOLINE

DIESEL

LP GAS

Dual springs, long guides. Pressure-oiled rockers. Stellite-faced valves, seats.

Clean-burning combustion chamber removes from outside. Upper half water cooled; lower half air insulated to concentrate heat at throat.

Four non-stick "keystone" rings, top ring chrome-plated. Two flat oil rings.

Full length water jackets.

Renewable cylinder sleeves.

Built-in oil cooler increases oil and engine life.

American Bosch injection pump and single-hole pintle nozzles.

Rifle-drilled rods. Oil jets cool pistons.

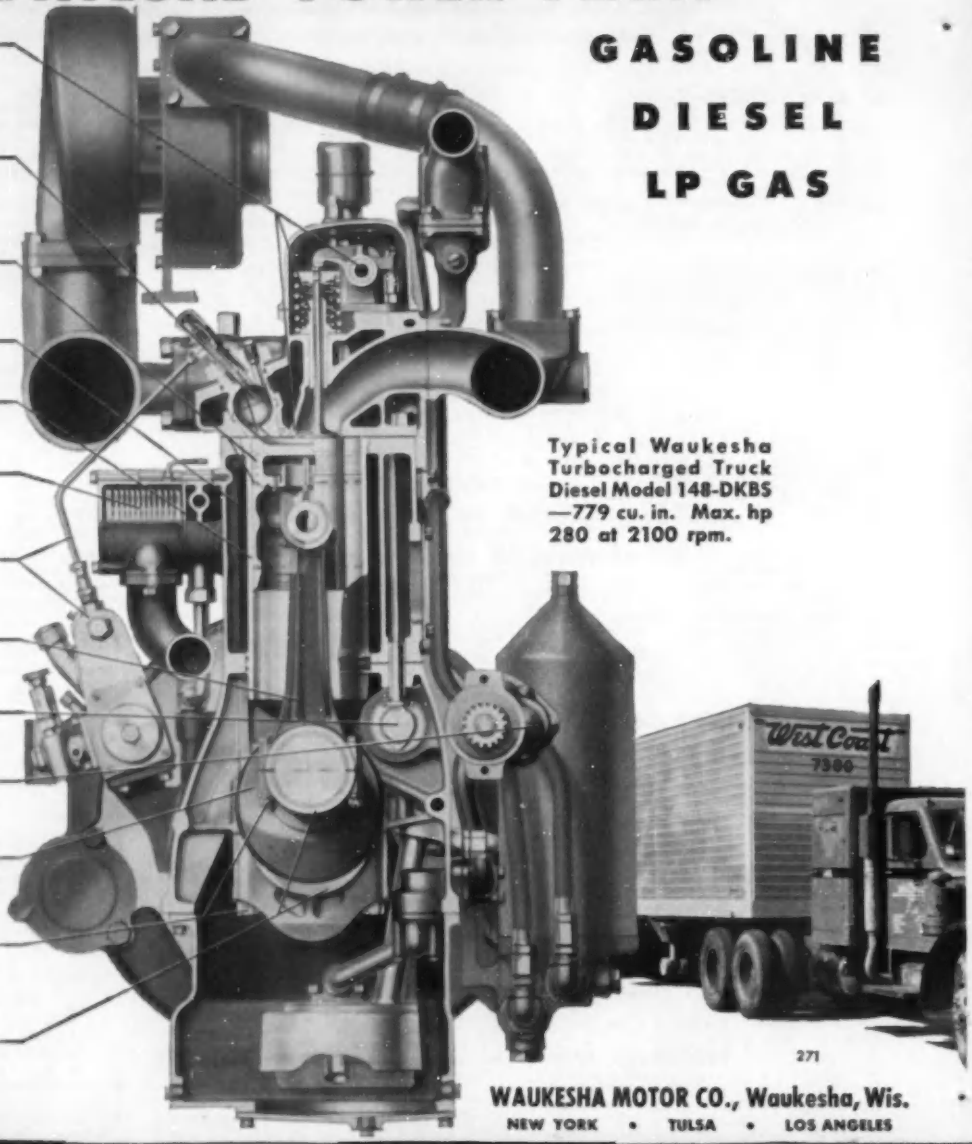
Hardened camshaft, single forging.

High-capacity outside oil pump.

Drop-forged hardened crankshaft. High-speed counterweights not shown.

Alloy-steel heat-treated rod and main bearing bolts.

Hardened main and rod journals. Steel-back, triple-element precision bearings, pressure oiled.

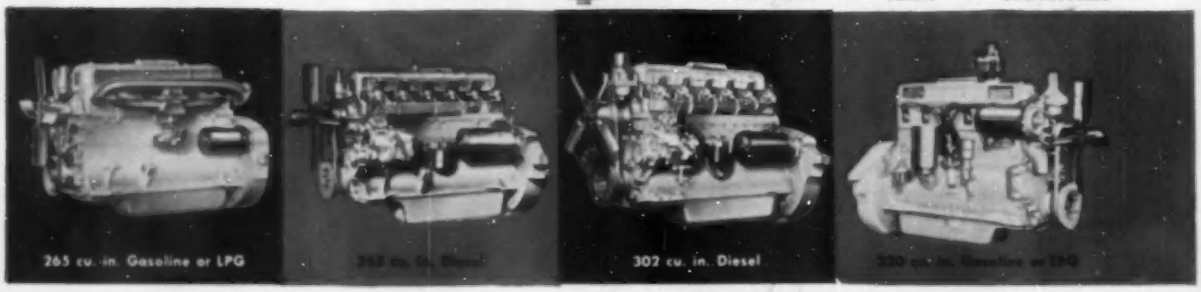


Typical Waukesha Turbocharged Truck Diesel Model 148-DKBS —779 cu. in. Max. hp 280 at 2100 rpm.

271

WAUKESHA MOTOR CO., Waukesha, Wis.

NEW YORK • TULSA • LOS ANGELES

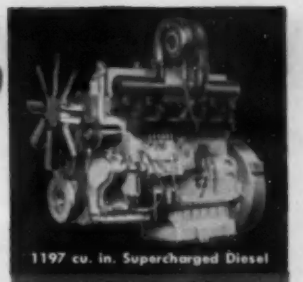


ENGINES

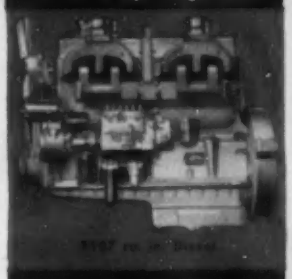
MODEL	Cyl.	*Features	Bore and Stroke	Displ. Cu. In.	Max. Torque @ RPM	Max. HP	RPM
TURBO-SUPERCHARGED DIESELS							
135-DKBS	6	ACTV	4¼x5	426	400-1800	185	2800
148-DKBS	6	ACTV	5¼x6	779	706-1800	280	2100
WAKDBS	6	ACTV	6¼x6½	1197	1062-1600	352	1800
NORMAL DIESELS							
185-DLC	6	A	3½x3¾	216	152-1200	60	2400
190-DLCA	6	AC	3¾x4	265	191-1400	85	2800
195-DLCA	6	AC	4 x4	302	221-1800	98	2800
135-DKB	6	ACV	4¼x5	426	328-1600	147	2800
148-DKB	6	ACV	5¼x6	779	584-1000	200	2100
WAKDB	6	ACV	6¼x6½	1197	845-1000	258	1800
GASOLINE							
185-GLB	6	A	3½x3¾	216	176-1400	67	2400
190-GLB	6	A	3¾x4	265	220-1200	77	2400
195-GKA	6	ACV	4½x4	320	243-1600	122	3000†
MZA	6	A	4¼x4¾	404	289-1000	128	2800†
135-GKB	6	ACV	4¼x5	426	337-1200	147	2800†
135-GZB	6	ACV	4⅜x5	451	354-1200	153	2800†
140-GKB	6	ACV	4½x5½	525	425-1000	177	2600†
140-GZB	6	ACV	4⅝x5½	554	448-1100	188	2600†
145-GKB	6	ACV	5¼x6	779	595-1000	240	2400†
145-GZB	6	ACV	5⅜x6	817	630-1100	250	2400†
WAKB	6	ACV	6¼x6½	1197	1000-1000	280	1800

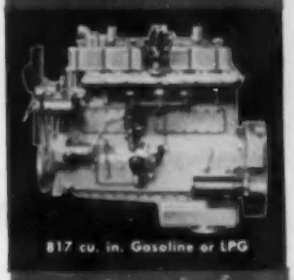
***FEATURES:** A—Aluminum Alloy Pistons; C—Counterbalanced Crankshaft; T—Turbo-Supercharged; V—Vibration Dampner.

†These engines rated at higher hp and rpm for fire engine service. *Send for Bulletin 1079 for LPG ratings and complete listing of engine hp and speed ratings.*

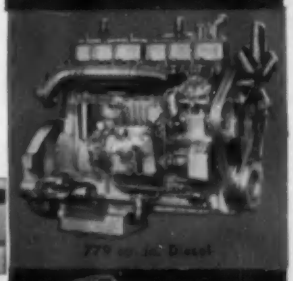


1197 cu. in. Supercharged Diesel

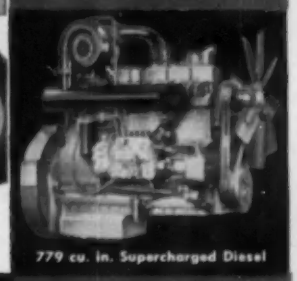




817 cu. in. Gasoline or LPG



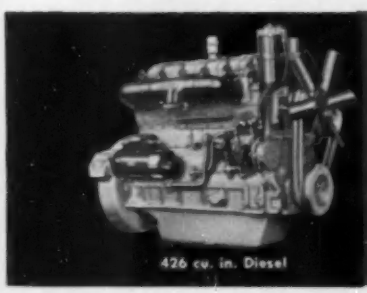
779 cu. in. Diesel



779 cu. in. Supercharged Diesel



OVER THE ROAD OR OFF THE HIGHWAY



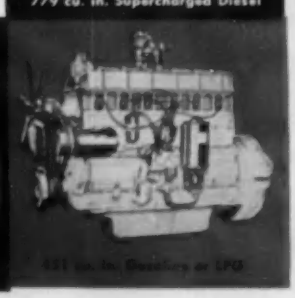
426 cu. in. Diesel



426 cu. in. Supercharged Diesel



554 cu. in. Gasoline or LPG



554 cu. in. Gasoline or LPG

Your Products Deserve Aeroquip Hose Lines



BECAUSE

YOUR CUSTOMERS PREFER AEROQUIP

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● **Nick Martino, master mechanic, of American Construction Company, Inc.: "Aeroquip's superior quality hose and reusable fittings mean less headaches due to downtime."** (*Operators of construction equipment*)



● **Albert Schardl, maintenance foreman, New Britain Transportation Company, Inc.: "Aeroquip has prevented road failure due to hose breakage. Within the next six months we expect to be 100% Aeroquip . . ."** (*Bus operators*)



● **Dale Wright, parts manager, Dan Dugan Trucking Company: "Aeroquip hose reduces our danger of breakdown in extremely cold weather. This hose is trouble free and easy to install."** (*Operators of truck fleet*)



● **Joseph Hruska, chief mechanic, F. J. Sibr & Sons: "We're using Aeroquip hose line for all of our replacements. It installs easily . . . the line is flexible and holds up better than copper tubing."** (*Operators of truck fleet*)

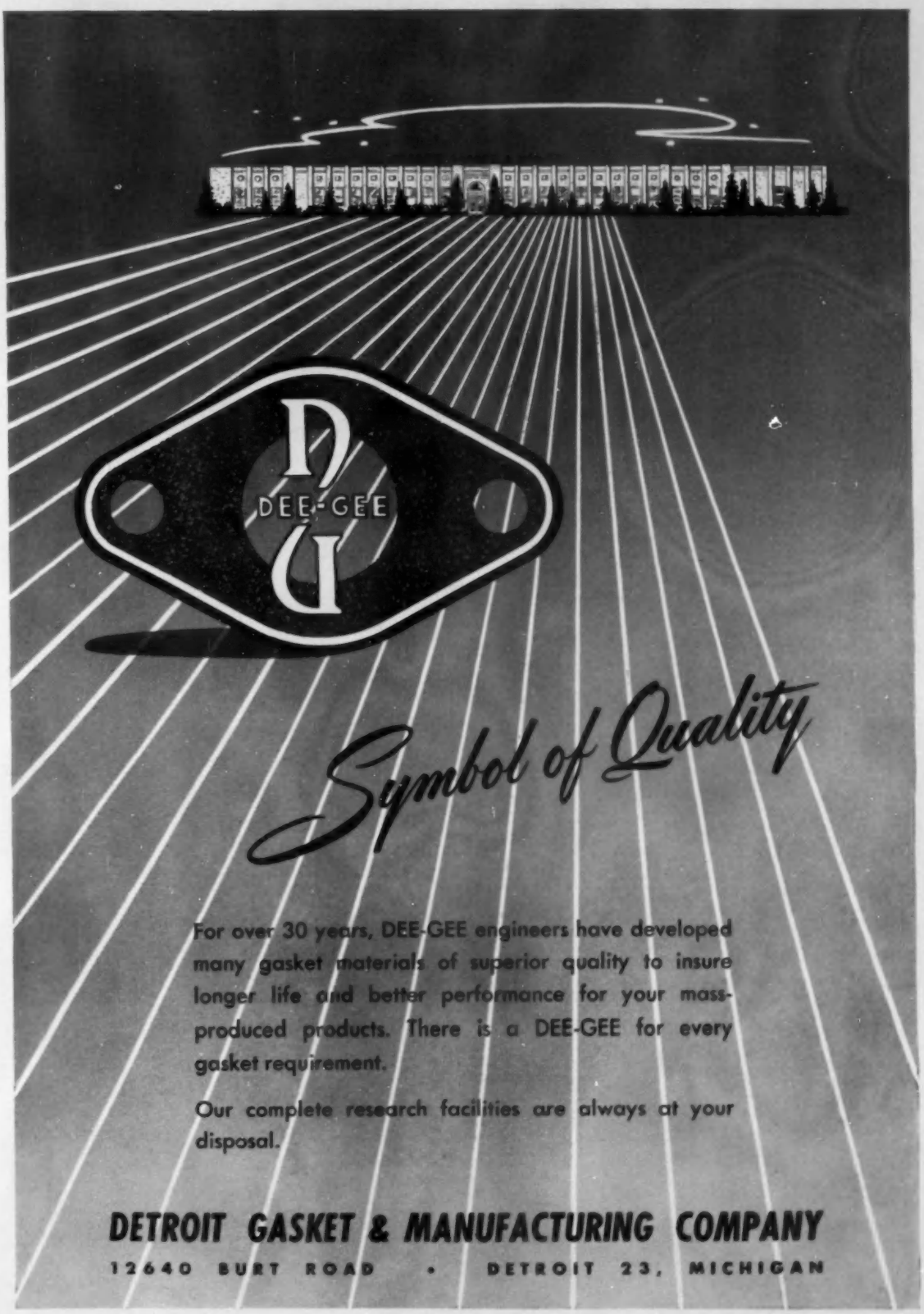
Engineering assistance is available . . . write for complete information.

Aeroquip

REG. TRADE MARK

AEROQUIP CORPORATION, JACKSON, MICHIGAN

LOCAL REPRESENTATIVES IN PRINCIPAL CITIES IN U.S.A. AND ABROAD ● AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD


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new LONG LIFE PISTON



Puts CAST IRON WEAR IN TOP RING GROOVE

G and E Wire Insert Piston before machining (left) and after ring grooves are cut (right) showing how the steel wire forms a tough wear-resistant surface on both faces of top ring groove. The ferrous plug molded in the head (for diesel pistons) prevents burning through head and lengthens diesel piston life!

G and E WIRE INSERT PISTONS

★ **Low initial cost— Low cost per mile**

★ **Amazing increase in piston life**

★ **Maintains new engine power and performance**

Here's an entirely new piston design that combines all the advantages of aluminum alloy pistons with the long life of steel in the top ring groove. No noticeable increase in weight. G and E Wire Insert Pistons are real top performers at LOW COST—barely more than ordinary alloy pistons!

This Gillett & Eaton exclusive steel wire insert cuts top ring groove wear and greatly increases mileage between overhauls.

You get longer piston wear at lower cost because G & E Wire Insert Pistons have a pre-shaped steel wire cast right in the piston wall where the top ring is located. When the grooves are machined, this tough wire is cut, exposing the closely spaced hard surfaced bearing points on top and bottom faces of the groove.

GET THE G AND E WIRE INSERT STORY — it will save piston money, maintenance costs, and cut operating costs.

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The Country's Best
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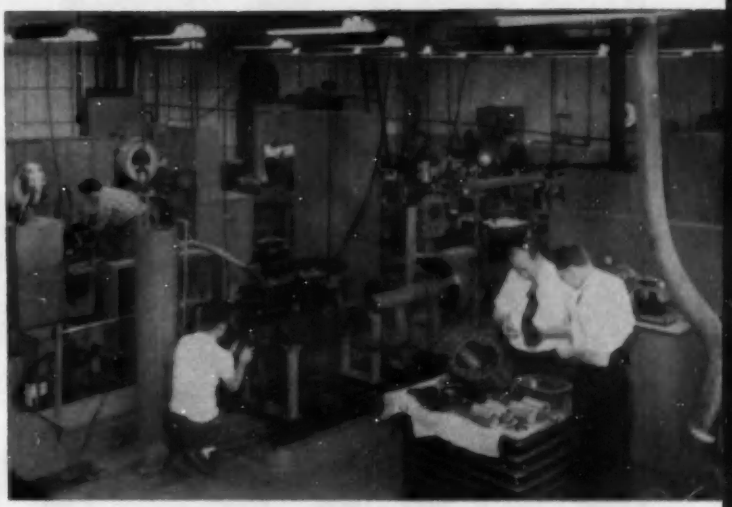


Crankshaft vibration dampers

For over a third of a century we have been major suppliers to all branches of the broad automotive industry. Our products have contributed much to the success of hundreds of blue ribbon internal combustion engines—large and small, mobile and stationary, land and marine, for all fuels, and for aircraft. We have acquired a wealth of engineering and field experience and ability to apply it to our customers' needs and manufacture our products economically. This experience and ability is available to you. Why not give us the opportunity to work with you on your new products or to improve current models?



Fans for all industries



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Automotive oil pumps





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Better Pistons Since 1922

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*The United Engine & Machine Company (manufacturers of Silv-o-Lite pistons) are licensed by Al-fin, a subsidiary of Fairchild Engine & Airplane Corporation under Bi-metallic piston patents 2398730, 2455457 and 2550879 in the manufacture of molecular bonded pistons.

DUALOY

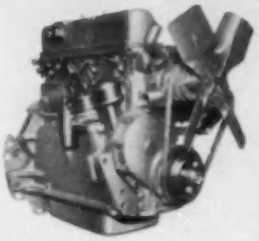
THE Bi-METALLIC MOLECULAR BONDED PISTON

UNITED ENGINE AND MACHINE COMPANY

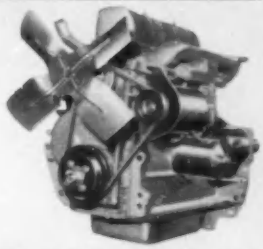
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Only FORD offers 4-, 6-, and 8-CYLINDER Short Stroke ENGINES

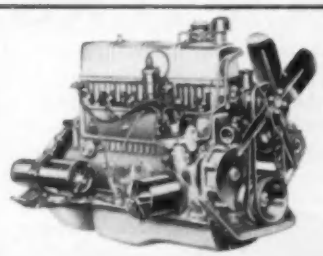
These Ultra-Modern Short Stroke Designed Engines Reduce Friction as much as 33%! Prolong Ring Life up to 53%!



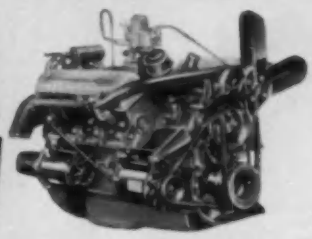
FORD "134" 4-Cyl. Engine Assembly 134 cu. in. displacement



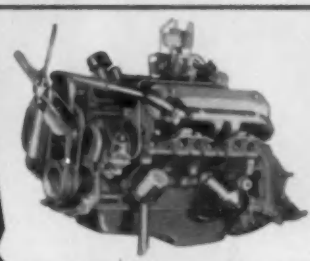
FORD "172" 4-Cyl. Engine Assembly 172 cu. in. displacement



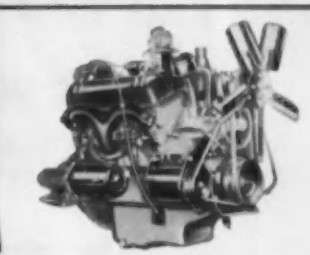
FORD "223" 6-Cyl. Engine Assembly 223 cu. in. displacement



FORD "239" V-8 Cyl. Engine Assembly 239 cu. in. displacement



FORD "256" V-8 Cyl. Engine Assembly 256 cu. in. displacement



FORD "317" V-8 Cyl. Engine Assembly 317 cu. in. displacement

Ford
INDUSTRIAL ENGINES AND POWER UNITS

Only Ford gives you overhead-valve 4-, 6-, and 8-cylinder engines—all of *proved*, modern short-stroke design to cut piston travel and piston speed, reduce friction and wear for extended engine life. Only Ford offers so many additional long-life advantages: deep-block crankcase construction for greater rigidity and smoother performance, self-cleaning free-turn valves with integral valve guides for 50% longer life, full-flow oil filter for reduced engine wear *and* many others.

Now, for '55, there are still more engineering advances . . . still more reasons why Ford engines run longer at lower cost!

Throughout the entire line . . . from the 134-cu. in. 4-cylinder engine with new manifolding for better breathing and improved performance, increased cooling capacity, and many other features . . . to the powerful "317" V-8 with a host of new durability advancements . . . '55 Ford engines are built stronger to last longer!

If you are planning to modernize your current industrial engine products, why not get in touch with us today. You'll find Ford Sales Engineers are always glad to discuss your particular power problems and extend every possible help in solving any of your engine requirements.

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FORD MOTOR COMPANY
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Provide Important Aavantages

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STOPS! RING GROOVE WEAR

Double Bonded

METALLURGICALLY Al-Fin Bond

MECHANICALLY Zollner Lock

ZOLLNER

"Ni-Resist" Iron Top Ring Section

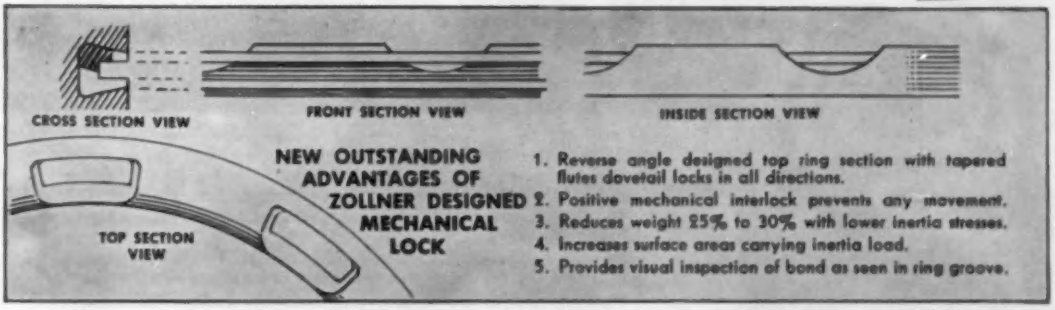
BOND LOC*

For Extra Heavy Duty Service

PISTONS



Up to 5 times more mileage is typical of this great new piston development by Zollner engineers. Designed for the most severe service, the BOND-O-LOC Piston has a "Ni-resist" iron top ring groove section *permanently* incorporated by *both* Al-Fin metallurgic bond and the exclusive Zollner mechanical lock. Separation failure is impossible. Reverse angles on every surface joining the "Ni-resist" iron section provide a multiple dovetail bond which is infinitely wedge-locked. Ring groove wear problems are eliminated, blow-by prevented, oil consumption reduced, mileage between overhauls greatly increased. Many heavy duty engine builders have already tested and approved BOND-O-LOC advantages. Request complete information, now.



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- ADVANCED ENGINEERING
- PRECISION PRODUCTION

in cooperation with engine builders

ZOLLNER PISTONS

THE ORIGINAL EQUIPMENT PISTONS

ZOLLNER

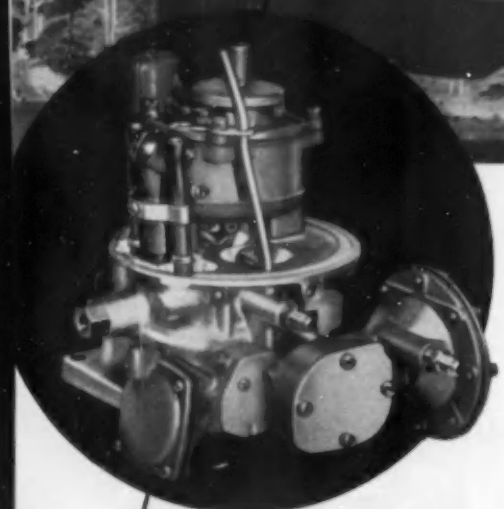
ZOLLNER MACHINE WORKS • Fort Wayne, Indiana

INTERNATIONAL *Pioneers the move* TO 4-BARREL CARBURETION!

HOLLEY CHOSEN FOR POWERFUL NEW 501 ENGINE SERIES

International's most powerful new engine—the Royal Red Diamond 501 valve-in-head—is installed in the new 220 truck series. This amazing new engine delivers 201 horsepower and 430 pound-feet of torque. *It is the first production truck engine to be equipped with a 4-barrel carburetor.*





This Holley-developed 4-barrel carburetor increases both engine output and power range. It is the first 4-barrel carburetor with a built-in governor; first with vacuum controlled secondary barrels.

The secondary barrels remain closed at low engine speeds, allowing the engine to maintain satisfactory velocities and distribution. Then, as engine speed increases to a point where additional breathing capacity is needed, the vacuum controlled secondary barrels open automatically.

Working closely with International engineers, Holley designed and developed this advanced carburetor-governor combination. It is original equipment on all tractors and trucks in International's new 220 series.

If *you're* wondering how to do a job of fuel metering better and more efficiently, call Holley's Carburetor Engineers. Let them listen, test, recommend and design.

For Holley carburetor parts and service for International trucks, see your local International Harvester outlet.

HOLLEY
Carburetor Co.
VAN DYKE, MICHIGAN

Working with Automotive Engineers to Increase Standards of Performance and Economy for More than Half a Century.

Continental Red Seals are ENGINEERED AND BUILT for LONGER LIFE . . . LOWER OVER-ALL COST



TRANSPORTATION GASOLINE ENGINES

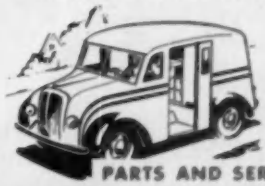
Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
N4062	4	2 1/16	3 1/2	62	26 @ 3400 RPM
Y4069	4	2 1/2	3 1/2	69	28 @ 3400 RPM
Y4091	4	2 3/8	3 1/2	91	36 @ 3400 RPM
F4124	4	3	4 1/8	124	47 @ 3200 RPM
F4140	4	3 1/16	4 1/8	140	52 @ 3200 RPM
F4162	4	3 1/16	4 1/8	162	58 @ 3200 RPM
F6186	6	3	4 1/8	186	77 @ 3500 RPM
F6209	6	3 1/16	4 1/8	209	90 @ 3500 RPM
F6226	6	3 1/16	4 1/8	226	99 @ 3500 RPM
M6271	6	3 1/8	4 1/8	271	97 @ 3000 RPM
M6290	6	3 1/4	4 1/8	290	108 @ 3000 RPM
M6330	6	4	4 1/8	330	125 @ 3000 RPM
M6363	6	4	4 11/16	363	138 @ 3000 RPM
K6271	6	3 1/8	4 1/8	271	115 @ 3200 RPM
K6290	6	3 1/4	4 1/8	290	123 @ 3200 RPM
K6330	6	4	4 1/8	330	145 @ 3200 RPM
B6371	6	4 1/8	4 1/8	371	124 @ 3000 RPM
B6427	6	4 5/16	4 1/8	427	142 @ 3000 RPM
T6371	6	4 1/8	4 5/8	371	144 @ 3000 RPM
T6427	6	4 5/16	4 1/8	427	169 @ 3000 RPM
U6501	6	4 1/2	5 1/16	501	178 @ 2800 RPM
R6513	6	4 1/2	5 1/8	513	180 @ 2800 RPM
R6572	6	4 1/4	5 1/8	572	200 @ 2800 RPM
R6602	6	4 1/8	5 1/8	602	212 @ 2800 RPM
V8603	8	4 1/8	4 1/16	603	240 @ 3200 RPM
S6749	6	5 1/16	5 1/2	749	250 @ 2800 RPM
S6820	6	5 1/16	5 1/2	820	277 @ 2800 RPM

TRANSPORTATION DIESEL ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
TD6427	6	4 5/16	4 1/8	427	116 @ 2400 RPM
RD6572	6	4 1/4	5 1/16	572	162 @ 2400 RPM
VD8603	8	4 1/8	4 1/16	603	182 @ 2800 RPM
SD6802	6	5 1/16	5 1/2	802	225 @ 2200 RPM

It is a significant fact that Red Seal transportation engines find their widest acceptance in the really tough jobs where extra stamina is a prime consideration. You see more and more of them in heavy-duty highway trucks and tractors, both as original equipment and as replacements for other makes. You see them in buses and taxicabs, and in door-to-door delivery vehicles where frequent starts and stops, and protracted idling time, impose problems found nowhere else. The list of Red Seal gasoline and Diesel models at the left includes the one best power plant for every transportation job.





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These leading firms, and many more, have chosen Donaldson Air Cleaners to protect their engines against dust.

For the tractors, trucks and other equipment which these engines power, Donaldson Air Cleaners assure high-level performance *longer!*

This long-life protection and "follow-through" service have made the Donaldson Company the world leader in heavy-duty air cleaners.

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AIR CLEANERS
MUFFLERS

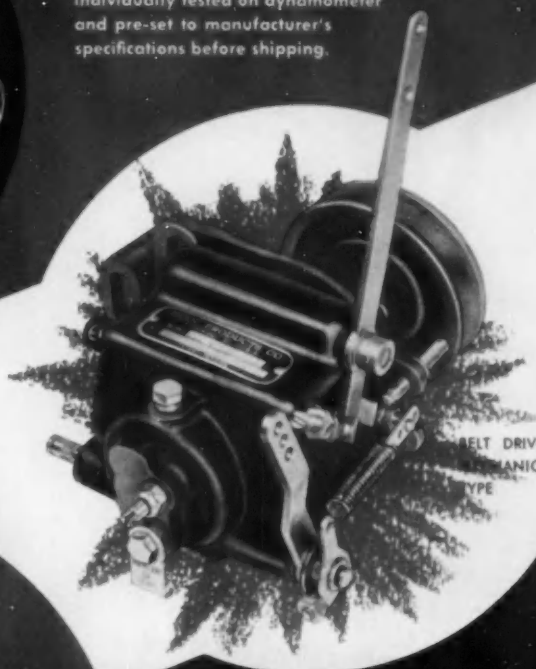
HOOF *Governors*

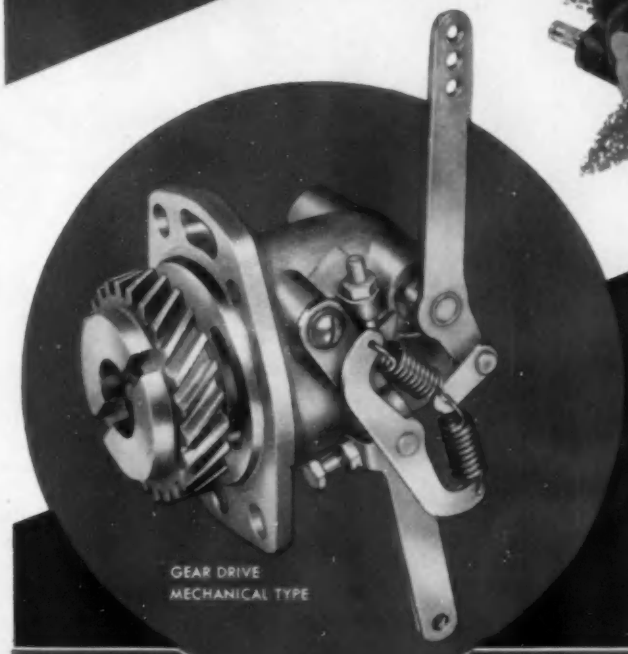


VELOCITY TYPE

VELOCITY TYPE

Exclusive, patented Cantilever Spring gives more accurate speed control and longer life. Trouble-free (diaphragm type) anti-cheat mechanism. Each governor individually tested on dynamometer and pre-set to manufacturer's specifications before shipping.


BELT DRIVE
MECHANICAL
TYPE


GEAR DRIVE
MECHANICAL TYPE

MECHANICAL TYPE

In their many industrial applications, Hoof mechanical governors provide close regulation regardless of load conditions over wide operating range. These units feature ball or roller bearings at all load points; large oil capacity to eliminate daily oiling and a light, sturdy actuating lever to assure maximum freedom from surging.

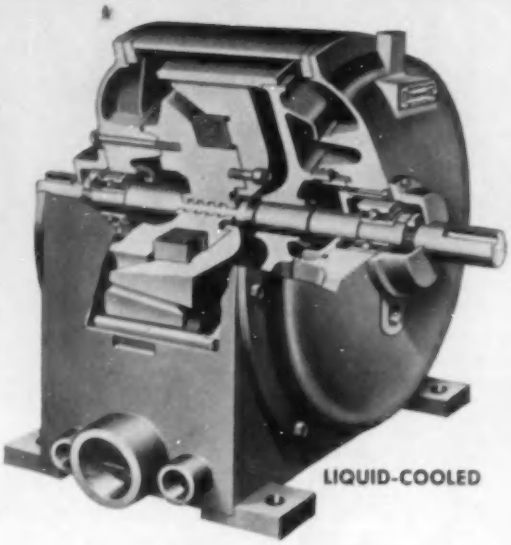
Hoof Governors, Velocity and Centrifugal Types • Hydraulic Valves for Aircraft

Your Correspondence Is Invited

HOOF PRODUCTS CO.

6543 S. LARAMIE AVE., CHICAGO 38, ILLINOIS

There are Hundreds of Uses for



LIQUID-COOLED

DYNAMATIC®

EDDY-CURRENT BRAKES

Wide range of torque capacities and operating speeds. Smooth, frictionless, shock-free operation. No rotating electrical components or contacts. Electronic or magnetic amplifier control from AC power.

Here Are Some Suggestions

Providing constant tension or constant linear feet per minute speed for unwind stands in metals, fabric, plastic, and paper industries.



AIR-COOLED

For accurately controlling lifting and lowering functions of cranes and hoists by creating an opposed load on a wound rotor motor.

Providing a controlled load for the production testing of engines, transmissions, or axles.

Smooth stopping of high inertia masses; precise control of deceleration with automatic or manual controls.

For Complete Information
Send for Your Copy of Our New Illustrated Bulletin No. BR-1

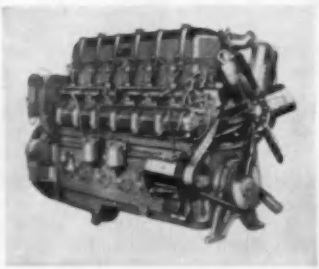
EATON®

EATON

DYNAMATIC DIVISION
MANUFACTURING COMPANY
3307 Fourteenth Ave. • Kenosha, Wisconsin
General Offices: Cleveland, Ohio



when to look a horse in the mouth



Horsepower 30 to 255
Two-cycle • 2-, 3-, 4-, 6-cylinder models • Speeds to 1800 rpm
Stationary, mobile, marine Diesel-generator sets

The answer is, *whenever you buy horsepower.*

Horsepower ratings can be tricky. An engine rated at 90 h.p. in the laboratory may produce far less on the job.

For the P&H Diesel, we've chosen a more realistic measurement. *Working* horsepower. Buy 90 h.p. and you *get* 90 h.p. — at the drive shaft, where you can put it all to work.

Of course, when you're looking at diesels, you'll want to look at the cost. When you do, you'll learn that a P&H costs less per horsepower than any other. Look again, and you'll see that it delivers more horsepower for every pound of weight. Once more, and you'll find that of all the diesels this one is the easiest to service.

Why look further?

P&H Diesel Engine Division, Harnischfeger Corporation, Crystal Lake, Ill.

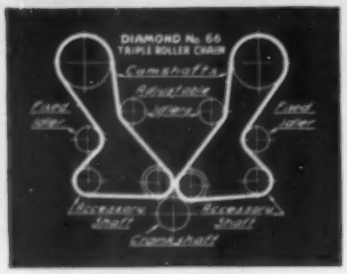
THE P&H DIESEL

lowest price per horsepower
lowest weight per horsepower

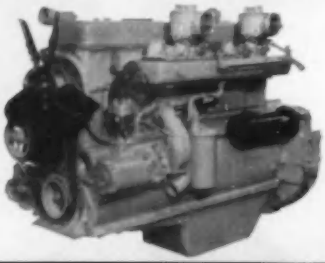
FOR BETTER PERFORMANCE—AND ECONOMY

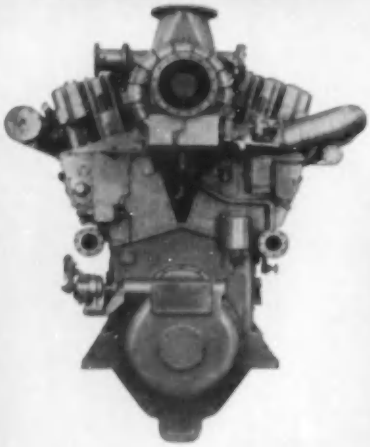
DIAMOND ROLLER CHAINS

TIMING AND AUXILIARY ENGINE DRIVES

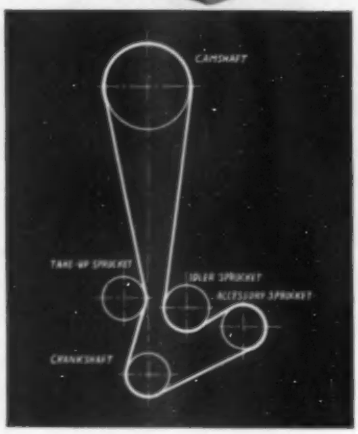


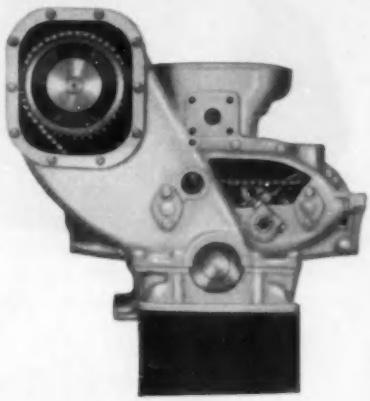
The new Hall-Scott 590 six cylinder truck engine, available for gasoline or LPG, delivers over 200 horsepower, weighs less than 1,300 pounds and is under 50 inches in overall length. 182 pitches of Diamond No. 82 quadruple-strand Roller Chain drive the overhead camshaft as shown below.



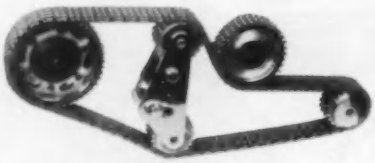


On the Cooper-Bessemer L.S.V. Engine, Diamond No. 470 quadruple Chain is installed from the timing drive camshaft to intermediate shaft and Diamond No. 148 for the auxiliary drive.





Hercules Diesel engine D00 four cylinder and gas engine QXLD-3 six cylinder have:—Diamond Double No. 66 Roller Chain from crankshaft to pump shaft. Single No. 66 for fuel oil pump drive.



Twin Coach buses and Super Freighters are powered by Fageol engines (gasoline or propane) equipped with Diamond Chain Quad #82 Roller Chain timing drives.

• For over a quarter century the use of Diamond Roller Chains has included many applications on all types of engines: — gas, gasoline, diesel and dual-fuel up to 5000 h.p. and at speeds as high as 10,000 r.p.m. in stationary, marine and land transportation service. Wide usage has demonstrated their unmatched long-life reliability, high maintained efficiency and smoothness of operation. Efficiency remains practically the same throughout long service. The finish of working surfaces improves with scarcely measurable wear.

And These Definite Diamond Advantages

1. Adaptability to wide range of shaft centers, speeds, and ratios.
2. Drive from either face.
3. Create no end play.
4. Make close shaft centers and clearance tolerances unnecessary.
5. Quiet when installed — Remain quiet.
6. Low in first and final cost.

DIAMOND CHAIN COMPANY, Inc.
626 Kentucky Avenue, Indianapolis 7, Indiana

Diamond Engineers offer complete design and application service.

ALWAYS PRELOADED

For many, many years, Diamond Chain has been preloaded after assembly for the purpose of bringing pin-bushing seating into stabilized relationship prior to field installation.

SHOT-PEENING SINCE 1944

Diamond Chain has long recognized that certain types of internal stressing of chain parts would increase fatigue resistance. To this end, link plates have been specially processed and chain rollers and other parts have been shot-peened since 1944

DIAMOND ROLLER CHAINS



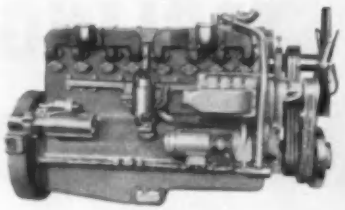
on highway

BUDA Diesels...LPG Engines...

Power For Profitable Operation



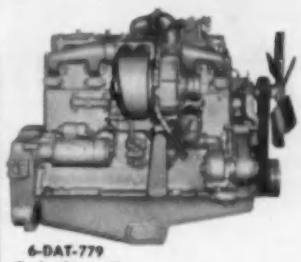
off highway



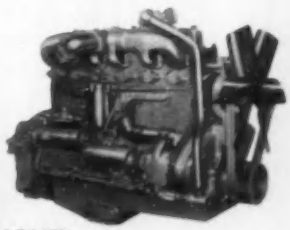
8-DAS-1125
(Supercharged)
250 H.P.

There's a Buda Diesel or LPG Engine for every type of equipment and application—a complete range of dependable power up to 350 HP. More and more Buda engines are being installed as replacements or specified in new equipment because power and cost-conscious users know they can depend on them for lower all around costs, minimum maintenance and longer life between overhauls.

Why not investigate the positive sales and performance advantages Buda Diesel or LPG engines can bring to your equipment? The Buda Company, Division of Allis-Chalmers Manufacturing Company, Harvey, Ill.



6-DAT-779
(Turbocharged)
275 H. P.

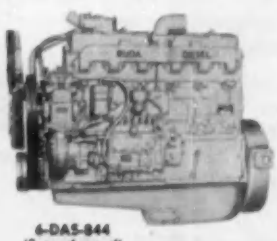


6-DA-779
185 H.P.

MODEL	Bore and Stroke*	Displ. Cu. Inches*	Max. Torque @ RPM	HP @ Max. Speed
8-DAS-1125*	5½x6½	1125	960@1450	350@2100
8-DA-1125	5½x6½	1125	800@1100	287@2100
6-DAS-844*	5½x6½	844	780@1550	280@2100
6-DA-844	5½x6½	844	650@1300	215@2100
6-DA-779	5½x6	779	540@1400	185@2100
6-DAT-779	5½x6	779		275@2100
6-DT-317	3¾x5¼	317	222@1500	91@2500
6-DA-373	3¾x4½	373	206@1600	86@2600

*Supercharged

Write today for Bulletins and Specification sheets on Buda Diesels. Sent without obligation.



6-DAS-844
(Supercharged)
280 H.P.

BUDA DIVISION • HARVEY, ILLINOIS

ALLIS-CHALMERS MANUFACTURING COMPANY

BA-34



1953 **STERLING introduced a new, amazing piston**

1954

ONE car manufacturer selected the new piston

1955

7 Manufacturers specify STERLING CONFORMATIC* PISTONS

In 1956... there will be more! This quick acceptance by automotive engineers is a result of the demonstrable superiority of Sterling Conformatic Pistons. Sterling Engineers will be glad to show you how Conformatic Pistons can improve your engine's performance. Conformatic eliminates cold slap, scuffing and frictional power losses... because it conforms exactly to the cylinder walls over the entire operating range. Your Sterling Engineer can give you complete details and arrange a test.

***Now* LOW-COST**

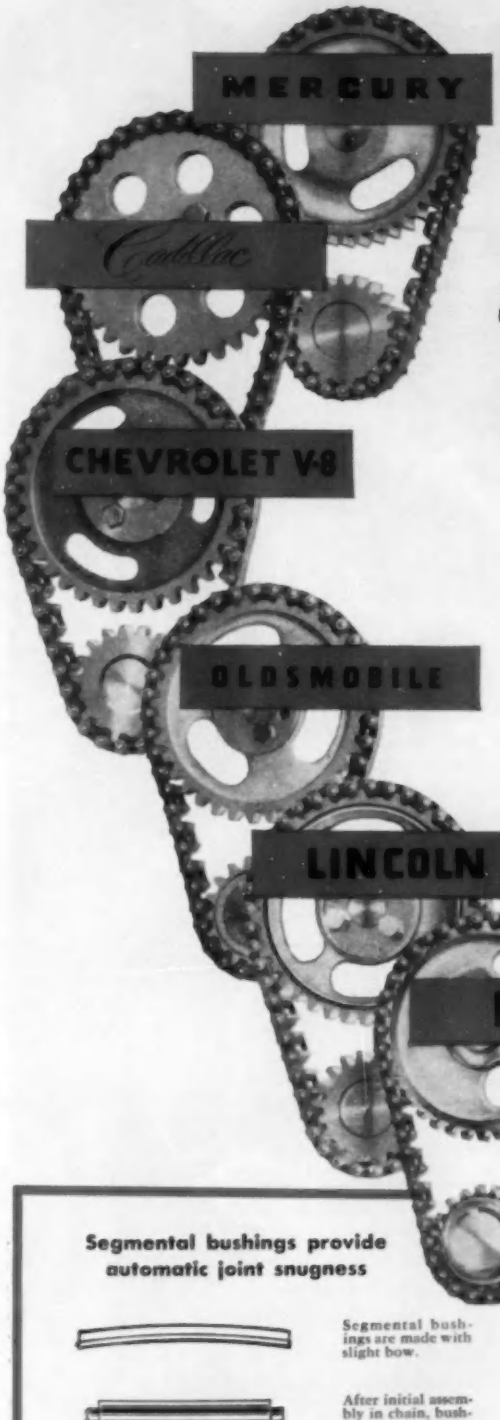
RING LAND PROTECTION

in Sterling* CONFORMATIC *Pistons

Ring grooves lined with lightweight intra-cast steel inserts give Sterling Conformatic Pistons even longer life... greater efficiency. An optional feature for truck and passenger car pistons.

STERLING ALUMINUM PRODUCTS INC.
ST. LOUIS, MISSOURI

*TRADE NAME REGISTERED



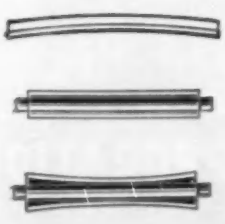
WHY
LINK-BELT TIMING CHAINS
are standard equipment on these automobiles

It's the only timing chain that gives you these 3 big advantages

- ✓ AUTOMATIC JOINT SNUGNESS
- ✓ SMOOTHER OPERATION
- ✓ LONGER LIFE

WHY the strong preference for Link-Belt Timing Chain? First, for the flexibility and superior performance of timing chain itself. Too, because Link-Belt offers segmental bushed joints with anti-whip, anti-back-bend features for quiet operation and long life. Let our engineers supply a test drive to your specifications. And for full information, get Book 2065.

Segmental bushings provide automatic joint snugness



Segmental bushings are made with slight bow.

After initial assembly in chain, bushings are straight.

Bow in bushing acts to keep a snug joint on non-load side, maintaining chain pitch automatically.

LINK-BELT

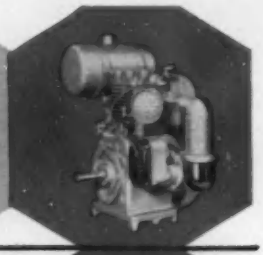
TIMING CHAINS AND SPROCKETS

LINK-BELT COMPANY, 220 South Belmont, Indianapolis 6, Ind.

The WISCONSIN Line of Heavy-Duty Air-Cooled ENGINES

Offers the Most Complete POWER SELECTIVITY to Fit the Job and the Machine in a 3 to 36 Hp. Range

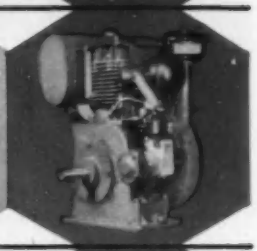
4-cycle
Single Cylinder
Models
ABN
AKN
2.2 to 6.2 hp.
1600-3600 rpm.



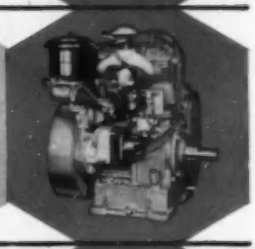
4-cycle
Single Cylinder
Model
AEN
4.5 to 8.25 hp.
1600-3600 rpm.



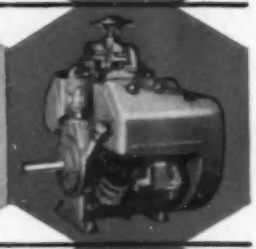
Single Cylinder
Models
AFH
AGH
AHH
6 to 9.2 hp.
1600-2200 rpm.



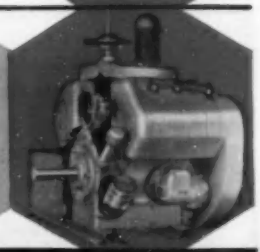
2-cylinder
Models
TE
TF
TFD
7.2 to 15 hp.
1400-3000 rpm.



V-type
4 Cylinder
Models
VE4
VF4
13 to 25 hp.
1400-2400 rpm.



V-type
4 Cylinder
Model
VG4D
25 to 36 hp.
1400-2200 rpm.



Wherever auxiliary engine-driven equipment is employed, such as truck and trailer refrigeration units, lift trucks and various other types of materials handling equipment, as well as a great variety of agricultural, construction, railway maintenance, industrial and oil field equipment . . . Wisconsin Engines are most extensively specified as original power components, within their horsepower range.

Based on U. S. Census Bureau Reports, issued by the Department of Commerce ("Facts for Industry", released July 19, 1954), Wisconsin Motor Corporation produced 50.72% of ALL carburetor type internal combustion engines within an 11 to 176 cu. in. displacement range during 1953. This refers specifically to engines built for re-sale, exclusive of automotive, aircraft, outboard marine, and "captive" engines . . . representing an industry-wide gain of 1.33%. This, however, is an ultra-conservative figure inasmuch as the Wisconsin line covers a range of 13.5 to 154 cu. in. disp., whereas the Census Grouping covers engines from 11 to 176 cu. in. displ. In spite of this fact, Wisconsin Engine production amounted to more than 50% of the entire engine industry's total in the above bracket.

Statistically, these figures are interesting to us as evidence of consistent progress. To the Original Equipment Builder, Distributor and User of engine power, this report is significant because it provides definite proof of INCREASED PREFERENCE for Wisconsin Heavy-Duty Air-Cooled Engines among people who are best qualified to judge comparative engine values in terms of performance, economy, low cost maintenance and long engine life.

You can't go wrong if you specify "WISCONSIN ENGINES" for the original equipment you build, sell or use.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

A 8334-1PC-R

Eaton Increases Valve Life

5 ways

Eatonite-Faced Valves

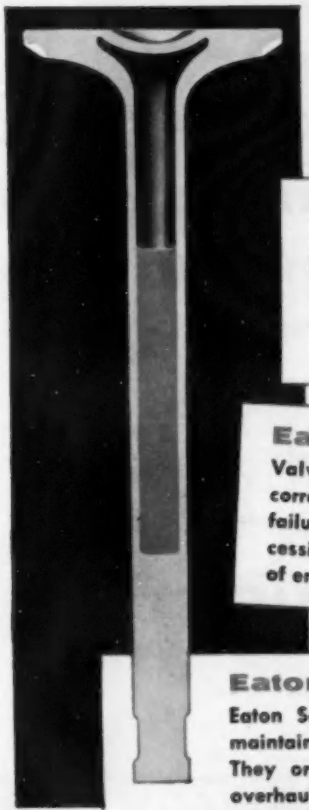
Eatonite — heat resistant, corrosion resistant, wear resistant—applied to valves by a special Eaton-developed process, adds materially to valve life. Available on solid valves, hollow sodium-cooled valves, or free-valves.





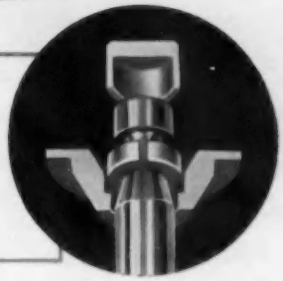
Eaton Hydraulic Valve Lifters

Eaton Zero-Lash Hydraulic Valve Lifters maintain zero valve clearance under all operating conditions; improve valve seating; prevent valves pounding into seats. Available in all types and materials.



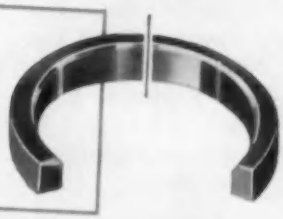
Eaton Free-Valves

Freedom to turn in either direction prevents formation of stem and seat deposits; no sticking or scuffing; no burning or guttering. Eaton Free-Valves can be applied to engines of all types without costly design changes.



Eatonite Valve Seat Inserts

Valve seat inserts of Eatonite—heat resistant, corrosion resistant, wear resistant—reduce valve failure caused by prolonged operation at excessive temperatures and maintain a high level of engine output. Available for all types of engines.



Eaton Sodium-Cooled Valves

Eaton Sodium-Cooled Valves run cooler, last longer, maintain a high level of engine output and economy. They ordinarily require no attention between engine overhauls; keep trucks on the job; pay for themselves many times over.

EATON

EATON

—VALVE AND SAGINAW DIVISIONS—

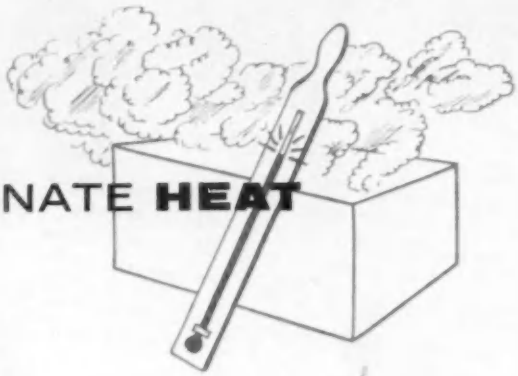
MANUFACTURING COMPANY

9771 FRENCH ROAD • DETROIT 13, MICHIGAN

General Offices: CLEVELAND, OHIO

EATON PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

NEW HOUGHTON COLD CLEANERS



ELIMINATE **HEAT**



ELIMINATE **FIRE HAZARD**



ELIMINATE **TOXICITY**

Yes, Houghton new cold cleaners make hot, steamy, dangerous metal cleaning processes obsolete!

Whether your metal cleaning requirements call for production line power washers or dip tank methods, there is a Houghton Cold Cleaner to do the job. These new Cold Cleaners not only eliminate the need for costly, uncomfortable heating of cleaning compounds and the dangers of low flash point solvents and toxicity but they do a better, quicker, more thorough cleaning job at less cost!

Take the first step now to modernize and improve your metal cleaning processes. Ask your Houghton Man about these new Cold Cleaners, or write for the new Cold Cleaner bulletin. E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pennsylvania.

FROM METAL CLEANING OPERATIONS

HOUGHTO-CLEAN COLD CLEANERS

. . . products of

E. F. HOUGHTON & CO.

PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO



Ready to give you on-the-job service . . .



PRODUCTION, MATERIALS & MANAGEMENT SECTION

4

FINANCE · INDUSTRIAL PRODUCTION · LABOR FORCE WAGES · COST OF LIVING · WHOLESALE PRICES · MACHINE TOOLS · MATERIALS · MATERIALS HANDLING EQUIPMENT SPECIFICATIONS—POWERED HIGH-LIFT TRUCKS • POWERED LOW-LIFT TRUCKS • POWERED NON-LIFT TRUCKS • TOWING TRACTORS · **DIRECTORY OF MANUFACTURERS** ·

AI
AUTOMOTIVE INDUSTRIES
37TH ANNUAL STATISTICAL ISSUE · 1955



YOU DON'T CUT ANY FASTER...

you just finish the job sooner

and at lower cost per piece

Most *good* modern machines will cut as fast as today's carbide and high-speed tools will take it, so your actual time per cut will be the same, regardless of the machine you use. But when you put jobs like this on an

Acme-Gridley Fully Automatic Turret Lathe

you *finish them faster* because non-cutting (idle) time is accelerated and controlled. The complete machining cycle is entirely automatic and predetermined—to give the minimum time per piece, on *every piece*. Machining is done at the surface speed best suited for required finish and tolerance because each toolslide is independently cammed and selective spindle speeds are automatically controlled.

Ask us to show you how *automatically controlled cycle** can turn non-productive "idle" time into savings like this—on your jobs.

Automatically controlled cycle IS **STANDARD** ON ALL ACME-GRIDLEYS.

Send for Catalogs M-50A and MC-53

JOB FACTS

- **PACKING GLAND NUT from 4¼" round 1112 C.D. Steel.**
- **12 OPERATIONS (with 9 tools) including threading and tapping.**
- **FORMER METHOD produced 409 pieces in 192 hours on hand operated machine.**
- **ON MODEL M ACME-GRIDLEY—325 pieces in 48 hours.**
- **SAVINGS—7 to 2 production increase at better than 3 to 1 savings in cost per piece.**



OUR JOB: to provide the *Right Machine* for **YOUR JOB**

Acme-Gridley 4, 6 and 8 Spindle Automatic Bar and Chucking Machines • Fully Automatic Turret Lathes (Bar and Chuck Type) • Hydraulic Thread Rolling Machines • Automatic Threading Tools • Switches • Solenoids • Contract Manufacturing.

THE NATIONAL ACME COMPANY

173 EAST 131st STREET • CLEVELAND 8, OHIO



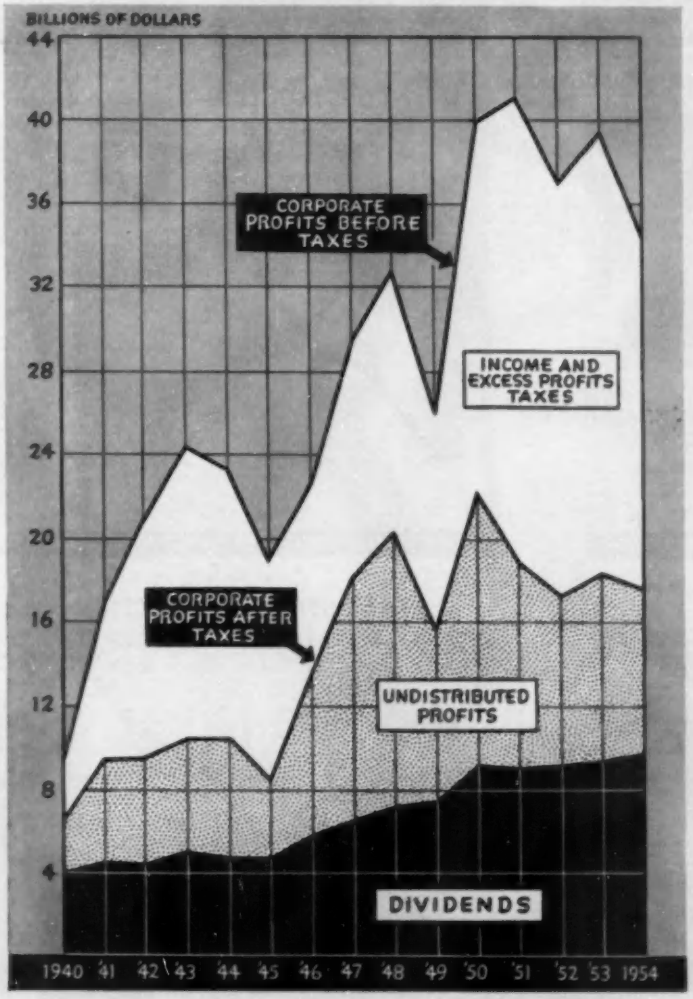
FINANCE

Corporate Profits Before and After Taxes

National Income Division, Department of Commerce
(In Millions of Dollars)

Year	Corporate Profits Before Taxes	Income and Excess Profit Taxes	Corporate Profits After Taxes	Corporate Dividends	Undistributed Corporate Profits
1940	$ 9,320	$ 2,834	$ 6,486	$4,043	$2,443
1941	16,982	7,610	9,372	4,458	4,914
1942	20,882	11,415	9,467	4,289	5,178
1943	24,554	14,074	10,480	4,484	5,996
1944	23,320	12,949	10,371	4,673	5,698
1945	18,977	10,689	8,288	4,691	3,597
1946	22,551	9,111	13,440	5,784	7,656
1947	29,526	11,383	18,243	6,521	11,721
1948	32,769	12,510	20,259	7,248	13,011
1949	26,198	10,411	15,787	7,458	8,329
1950	39,970	17,829	22,141	9,207	12,934
1951	41,173	22,476	18,697	9,090	9,607
1952	37,174	19,965	17,209	9,128	8,081
1953	39,430	21,144	18,286	9,365	8,921
1954 (Est.)	35,000	17,200	17,800	9,900	7,900

1954 NET CORPORATE PROFITS DOWN 3%



Federal Government Finance

Receipts, Expenditures, Gross Debt
In Millions of Dollars

Year Ending June 30	Net Receipts	Expenditures	Gross Debt
1941	$ 7,227	$13,387	$ 55,332
1942	12,696	34,187	76,991
1943	22,202	79,622	140,796
1944	43,892	95,315	202,626
1945	44,762	98,703	259,115
1946	40,027	60,702	269,898
1947	40,042	39,259	258,376
1948	42,211	33,791	252,366
1949	38,246	40,057	252,798
1950	37,045	40,167	257,377
1951	45,143	44,633	255,251
1952	62,129	66,145	259,151
1953	65,218	74,697	266,123
1954	64,356	68,131	271,260

U. S. Savings Bonds

In Millions of Dollars

1954	Amount Outstanding	Sales	Redemptions
Jan.	$57,918	$ 561	$ 704
Feb.	57,960	515	560
Mar.	58,050	602	595
Apr.	58,106	511	538
May	58,159	464	510
June	58,189	523	628
July	58,129	508	693
Aug.	58,200	646	562
Sept.	58,207	464	544
Oct.	58,242	458	507
Nov.	58,290	466	510
Dec.	58,358	557	633
Total		$6,173	$6,987
1953	57,934	$5,797	$5,728
1952	58,046	4,161	5,078
1951	57,739	3,960	5,652
1950	58,245	6,074	5,844
1949	56,910	5,833	5,100
1948	55,197	7,295	6,148
1947	52,174	6,694	6,124

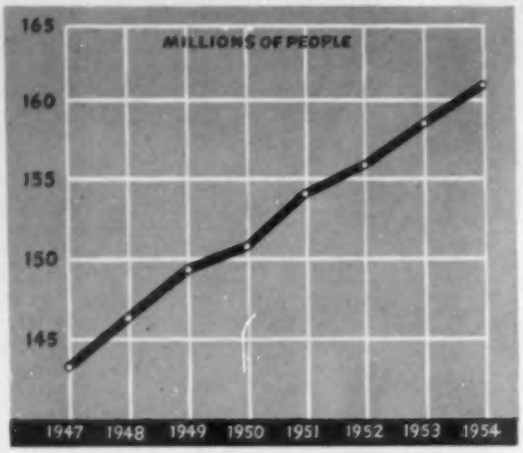
Purchasing Power of the 1947-49 Dollar

Office of Business Economics, Dept. of Commerce

1954	As Measured by Wholesale Prices	Consumer Prices	Retail Food Prices
Jan.	90.2	86.9	85.4
Feb.	90.5	87.0	88.8
Mar.	90.5	87.1	89.2
Apr.	90.1	87.2	89.0
May	90.2	87.0	88.3
June	90.9	86.9	87.9
July	90.6	86.8	87.3
Aug.	90.5	87.0	87.8
Sept.	90.9	87.2	89.0
Oct.	91.2	87.2	89.4
Nov.	90.9	87.2	90.0
Dec.	91.2	87.5	90.6
Monthly Averages			
1954	90.6	87.1	88.8
1953	90.8	87.4	89.7
1952	89.6	88.1	87.3
1951	87.1	90.1	88.6
1950	97.0	97.3	98.8
1949	100.8	98.2	100.0
1948	95.8	97.3	96.1
1947	103.7	104.7	104.3
1946	127.1	119.9	126.6
1945	145.3	130.0	146.1
1944	147.9	133.0	148.4
1943	149.3	135.1	146.4
1942	155.6	143.5	163.1
1941	176.1	159.0	191.6

Significant Indicators

U.S. POPULATION



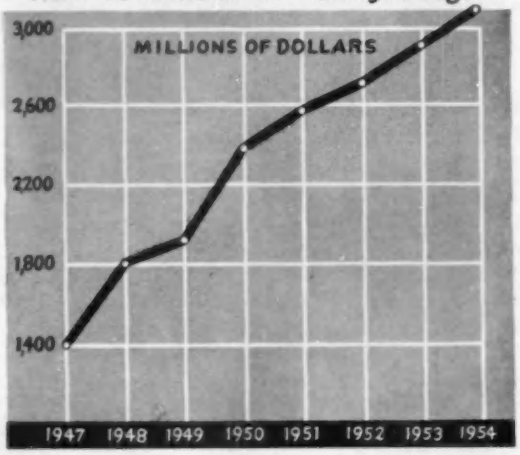
PER CAPITA INCOME PAYMENTS



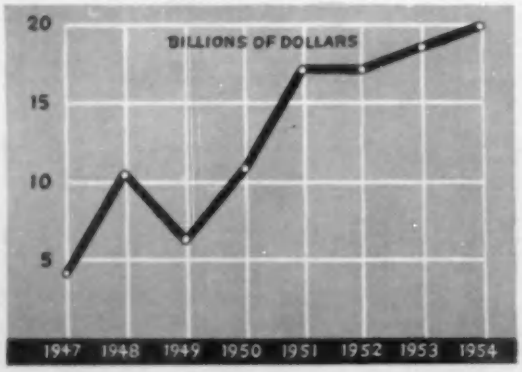
NATIONAL INCOME



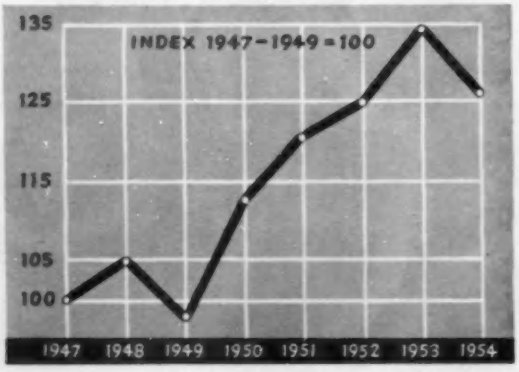
NEW CONSTRUCTION–*Monthly Average*



PERSONAL SAVINGS



INDUSTRIAL PRODUCTION





POPULATION

Estimated Population of the U. S. by States as of July 1, 1954*

As reported by the Bureau of the Census, Department of Commerce

State	Population	% of Total	State	Population	% of Total	State	Population	% of Total
Alabama	3,121,000	1.94	Maine	930,000	.58	Oklahoma	2,268,000	1.41
Arizona	998,000	.62	Maryland	2,602,000	1.61	Oregon	1,629,000	1.02
Arkansas	1,910,000	1.18	Massachusetts	4,954,000	3.07	Pennsylvania	10,779,000	6.69
California	12,554,000	7.79	Michigan	7,024,000	4.36	Rhode Island	824,000	.51
Colorado	1,456,000	.90	Minnesota	3,103,000	1.92	South Carolina	2,288,000	1.39
Connecticut	2,219,000	1.38	Mississippi	2,204,000	1.37	South Dakota	667,000	.41
Delaware	367,000	.23	Missouri	4,154,000	2.58	Tennessee	3,362,000	2.09
Dist. of Columbia	861,000	.53	Montana	628,000	.39	Texas	8,468,000	5.24
Florida	3,524,000	2.19	Nebraska	1,366,000	.83	Utah	757,000	.47
Georgia	3,660,000	2.27	Nevada	215,000	.13	Vermont	385,000	.24
Idaho	615,000	.38	New Hampshire	532,000	.33	Virginia	3,588,000	2.23
Illinois	9,165,000	5.68	New Jersey	5,250,000	3.26	Washington	2,540,000	1.58
Indiana	4,209,000	2.61	New Mexico	781,000	.48	West Virginia	1,947,000	1.21
Iowa	2,638,000	1.64	New York	15,432,000	9.57	Wisconsin	3,578,000	2.22
Kansas	2,016,000	1.25	North Carolina	4,250,000	2.64	Wyoming	313,000	.19
Kentucky	2,995,000	1.86	North Dakota	636,000	.39			
Louisiana	2,924,000	1.81	Ohio	8,554,000	5.31	Total	161,198,000	100.00

*—Does not include armed forces overseas but does include armed forces stationed in each state.

Estimates of the Civilian Population by States, by Age Groups

As reported by the Bureau of the Census, U. S. Department of Commerce

	POPULATION—JULY 1, 1953				POPULATION—APRIL 1, 1950				PER CENT INCREASE 1950 to 1953	
	Individuals		Per Cent of Total		Individuals		Per Cent of Total			
State	Under 21 Years	Over 21 Years	Under 21 Years	Over 21 Years	Under 21 Years	Over 21 Years	Under 21 Years	Over 21 Years	Under 21 Years	Over 21 Years
Alabama	1,335,000	1,739,000	43.4	56.6	1,311,000	1,742,000	42.9	57.1	1.8	—0.2
Arizona	392,000	520,000	43.0	57.0	305,000	437,000	41.2	58.8	28.5	19.1
Arkansas	796,000	1,093,000	42.1	57.9	796,000	1,112,000	41.7	58.3	(1)	—1.7
California	4,005,000	7,765,000	34.0	66.0	3,321,000	7,092,000	31.9	68.1	20.6	9.5
Colorado	525,000	855,000	38.1	61.9	475,000	833,000	36.3	63.7	10.7	2.6
Connecticut	702,000	1,450,000	32.6	67.4	623,000	1,378,000	31.1	68.9	12.7	5.2
Delaware	126,000	228,000	35.5	64.5	107,000	211,000	33.7	66.3	17.5	8.0
Dist. of Col.	243,000	557,000	30.4	69.6	209,000	561,000	27.1	72.9	16.6	—0.7
Florida	1,173,000	2,031,000	36.1	63.9	925,000	1,794,000	34.2	65.8	26.5	16.0
Georgia	1,500,000	2,006,000	42.8	57.2	1,423,000	1,980,000	41.8	58.2	5.4	1.3
Idaho	252,000	347,000	42.0	58.0	240,000	349,000	40.7	59.3	5.0	—0.6
Illinois	2,255,000	5,967,000	33.3	66.7	2,741,000	5,921,000	31.6	68.4	8.9	0.6
Indiana	1,502,000	2,608,000	36.5	63.5	1,377,000	2,555,000	35.0	65.0	9.1	2.1
Iowa	956,000	1,647,000	36.7	63.3	926,000	1,694,000	35.3	64.7	3.2	—2.8
Kansas	712,000	1,249,000	36.3	63.7	657,000	1,230,000	34.8	65.2	8.4	1.6
Kentucky	1,205,000	1,682,000	41.7	58.3	1,192,000	1,721,000	40.9	59.1	1.1	—2.3
Louisiana	1,202,000	1,637,000	42.3	57.7	1,092,000	1,578,000	40.9	59.1	10.1	3.8
Maine	339,000	563,000	37.6	62.4	336,000	576,000	36.9	63.1	0.9	—2.3
Maryland	904,000	1,560,000	36.7	63.3	804,000	1,502,000	34.9	65.1	12.4	3.9
Massachusetts	1,584,000	3,259,000	32.7	67.3	1,476,000	3,188,000	31.7	68.3	7.3	2.2
Michigan	2,560,000	4,277,000	37.4	62.6	2,262,000	4,099,000	35.6	64.4	13.2	4.4
Minnesota	1,146,000	1,903,000	37.6	62.4	1,072,000	1,909,000	36.0	64.0	6.9	—0.3
Mississippi	978,000	1,180,000	45.3	54.7	966,000	1,198,000	44.6	55.4	1.2	—1.5
Missouri	1,398,000	2,658,000	34.5	65.5	1,311,000	2,641,000	33.2	66.8	6.7	0.6
Montana	238,000	371,000	39.0	61.0	218,000	371,000	37.0	63.0	9.0	0.1
Nebraska	487,000	855,000	36.3	63.7	464,000	858,000	35.1	64.9	4.9	—0.4
Nevada	70,000	128,000	35.4	64.6	52,000	105,000	33.1	66.9	35.0	22.0
New Hampshire	182,000	340,000	34.9	65.1	180,000	351,000	33.9	66.1	1.4	—3.1
New Jersey	1,631,000	3,435,000	32.2	67.8	1,471,000	3,331,000	30.6	69.4	10.9	3.1
New Mexico	342,000	387,000	47.0	53.0	302,000	366,000	45.2	54.8	13.7	5.8
New York	4,770,000	10,400,000	31.4	68.6	4,447,000	10,254,000	30.0	70.0	7.3	0.4
North Carolina	1,777,000	2,319,000	43.4	56.6	1,736,000	2,278,000	43.2	56.8	2.4	1.8
North Dakota	258,000	362,000	41.7	58.3	253,000	367,000	40.8	59.2	2.1	—1.3
Ohio	2,957,000	5,391,000	35.4	64.6	2,664,000	5,274,000	33.6	66.4	11.0	2.2
Oklahoma	855,000	1,364,000	38.5	61.5	847,000	1,372,000	38.2	61.8	1.0	—0.6
Oregon	576,000	1,021,000	36.1	63.9	519,000	1,000,000	34.2	65.8	11.0	2.1
Pennsylvania	2,645,000	6,972,000	34.3	65.7	2,495,000	6,965,000	33.4	66.6	4.3	—0.2
Rhode Island	258,000	522,000	33.1	66.9	248,000	526,000	32.1	67.9	3.9	—0.7
South Carolina	990,000	1,141,000	46.5	53.5	960,000	1,136,000	45.8	54.2	3.1	0.5
South Dakota	260,000	390,000	40.0	60.0	251,000	399,000	38.6	61.4	3.6	—2.2
Tennessee	1,331,000	1,976,000	40.2	59.8	1,310,000	1,971,000	39.9	60.1	1.6	0.3
Texas	3,240,000	4,841,000	40.1	59.9	2,935,000	4,650,000	38.7	61.3	10.4	4.1
Utah	328,000	403,000	44.9	55.1	298,000	389,000	43.4	56.6	10.0	3.6
Vermont	142,000	233,000	37.8	62.2	140,000	237,000	37.1	62.9	1.3	—1.7
Virginia	1,345,000	2,001,000	40.2	59.8	1,263,000	1,957,000	39.2	60.8	6.5	2.2
Washington	878,000	1,523,000	36.6	63.4	800,000	1,516,000	34.5	65.5	9.7	0.4
West Virginia	814,000	1,124,000	42.0	58.0	834,000	1,172,000	41.6	58.4	—2.4	—4.1
Wisconsin	1,297,000	2,218,000	36.9	63.1	1,212,000	2,232,000	35.2	64.7	7.0	—0.2
Wyoming	119,000	176,000	40.3	59.7	102,000	173,000	33.8	61.2	8.5	1.9
Total	57,310,000	98,729,000	36.7	63.3	52,964,000	96,670,000	35.4	64.6	8.2	2.1

— = Decrease. (1)—Less than 0.1 per cent.

THE LABOR FORCE





TOTAL U. S. EMPLOYMENT—BUREAU OF LABOR STATISTICS

The Civilian Labor Force

	January, 1955	December, 1954	January, 1954
Civilian Labor Force	63,497,000	63,526,000	62,846,000
Employed	60,150,000	60,688,000	59,753,000
In Agriculture	5,297,000	5,325,000	5,284,000
In Nonagriculture	54,853,000	55,363,000	54,469,000
Unemployed	3,347,000	2,838,000	3,087,000

Federal Civilian Employment by Branch and Agency Group

All data are in Thousands

Month and Year	All Branches	EXECUTIVE: Total	Dept. of Defense	P. O. Dept.	Other Agencies	Legislative	Judicial
Continental United States[1]							
1954							
Jan.	2,184	2,157.9	1,058.0	504.4	595.5	21.7	3.9
Feb.	2,175	2,149.0	1,048.4	502.3	598.4	21.9	3.9
Mar.	2,173	2,147.2	1,041.4	500.8	605.0	21.8	3.9
Apr.	2,168	2,141.9	1,036.0	502.6	603.3	21.8	3.9
May	2,160	2,134.2	1,028.6	502.4	603.2	21.8	4.0
June	2,164	2,138.1	1,035.2	504.8	598.1	21.9	4.0
July	2,161	2,134.7	1,032.1	507.4	595.2	22.1	3.9
Aug.	2,156	2,130.1	1,026.6	505.7	603.8	22.0	4.0
Sept.	2,141	2,115.1	1,012.6	503.3	599.2	22.0	4.0
Oct.	2,147	2,120.5	1,011.1	501.6	607.6	22.1	4.0
Nov.	2,170	2,143.7	1,011.7	506.2	625.8	22.1	4.0
Dec.	....	....	....	....	....	....	..
Average	2,163	2,136.3	1,030.4	503.5	602.9	21.9	3.9
1953 Avg.	2,305	2,279.0	1,130.6	526.5	621.9	22.2	3.9
1952 Avg.	2,420	2,394.0	1,199.2	538.3	656.6	22.6	3.9
Washington, D. C., and Metropolitan area							
1954							
Jan.	228.4	207.7	87.8	9.0	110.9	19.9	0.8
Feb.	228.1	207.2	87.4	9.0	110.8	20.1	0.8
Mar.	228.0	207.2	87.3	9.1	110.8	20.0	0.8
Apr.	227.8	207.0	87.1	9.2	110.7	20.0	0.8
May	226.6	205.8	86.4	9.0	110.4	20.0	0.8
June	228.7	207.8	87.2	8.9	111.7	20.1	0.8
July	227.3	206.2	87.2	8.9	110.1	20.2	0.7
Aug.	226.1	205.2	87.0	8.8	109.4	20.2	0.7
Sept.	224.5	203.6	86.5	8.7	108.4	20.2	0.7
Oct.	225.8	204.4	86.8	8.7	108.9	20.2	0.7
Nov.	225.7	204.8	87.0	8.7	109.1	20.2	0.7
Dec.	....	....	....	....	....	....	..
Average	2,163	2,136.3	1,030.4	503.5	602.9	21.9	3.9
1953 Avg.	241.4	220.3	90.4	9.5	120.4	20.3	0.7
1952 Avg.	258.7	237.2	92.9	10.0	134.4	20.8	0.7

(1)—Includes the 48 states and the District of Columbia.

Production Workers in Manufacturing

All data in Thousands

Month	Total Mfg. Employment	PRODUCTION WORKERS: All Manufacturing	Durable Goods	Automobiles (Incl. Parts)	Aircraft and Parts	Nondurable Goods
1954						
Jan.	16,497	12,002	7,616	677	602	5,386
Feb.	16,349	12,006	7,520	655	596	5,386
Mar.	16,262	12,815	7,430	637	592	5,385
Apr.	16,122	12,590	7,309	625	585	5,281
May	16,035	12,457	7,228	601	575	5,229
June	15,994	12,450	7,177	594	570	5,303
July	15,775	12,212	6,917	561	565	5,295
Aug.	15,733	12,449	6,933	534	556	5,516
Sept.	15,789	12,611	7,015	478	559	5,596
Oct.	15,826	12,652	7,133	549	551	5,519
Nov.	16,015	12,697	7,247	630	552	5,450
Dec.	16,034	12,456	7,265	....	....	5,421
Average	16,041	12,628	7,221	595	573	5,398
1953						
Jan.	17,083	13,774	8,125	759	562	5,649
Feb.	17,225	13,897	8,228	786	573	5,669
Mar.	17,359	14,005	8,333	807	578	5,672
Apr.	17,389	13,929	8,241	816	569	5,688
May	17,283	13,890	8,211	809	569	5,679
June	17,416	13,985	8,326	787	573	5,659
July	17,336	13,875	8,194	779	574	5,681
Aug.	17,537	14,070	8,195	788	584	5,875
Sept.	17,510	14,061	8,161	721	596	5,900
Oct.	17,301	13,852	8,088	715	592	5,764
Nov.	16,988	13,534	7,910	686	567	5,624
Dec.	16,765	13,319	7,791	707	556	5,528
Average	17,239	13,859	8,167	760	577	5,693

Unemployment in 1954
5.0% of Labor Force

Month	Civilian Labor Force	Total Employment	Unemployment	Mfg. Employment
1954				
Jan.	62,840	59,753	3,087	16,424
Feb.	63,725	60,055	3,670	16,322
Mar.	63,825	60,100	3,724	16,234
Apr.	64,063	60,598	3,465	16,000
May	64,425	61,119	3,305	15,836
June	65,445	62,098	3,347	15,888
July	65,494	62,148	3,347	15,627
Aug.	65,522	62,277	3,245	15,863
Sept.	65,244	62,145	3,100	16,019
Oct.	64,882	62,141	2,741	16,058
Nov.	64,624	61,732	2,893	16,106
Dec.	63,526	60,688	2,838	16,102
Average	64,468	61,238	3,230	16,041
1953				
Jan.	62,416	60,524	1,892	16,884
Feb.	62,712	60,924	1,788	17,013
Mar.	63,136	61,460	1,674	17,135
Apr.	62,810	61,228	1,582	17,309
May	62,964	61,658	1,306	17,283
June	64,734	63,172	1,562	17,416
July	64,568	63,120	1,448	17,336
Aug.	64,648	63,408	1,240	17,537
Sept.	63,627	62,306	1,321	17,510
Oct.	63,876	62,575	1,301	17,301
Nov.	63,975	62,276	1,699	16,988
Dec.	62,993	60,680	2,313	16,765
Average	63,546	61,944	1,602	17,206
Monthly Averages				
1952	62,966	61,293	1,673	16,209
1951	62,884	61,005	1,879	16,082
1950	63,099	59,957	3,142	14,967
1949	62,105	58,710	3,395	14,178
1948	61,442	59,378	2,064	15,321

Employment by Sex

All data are in Thousands.

Month	Total Civilian Labor Force: Male	Female	Total Employment: Male	Female
1954				
Jan.	N.A.	N.A.	N.A.	N.A.
Feb.	44,167	19,558	41,625	18,430
Mar.	44,057	19,768	41,504	18,596
Apr.	44,337	19,726	41,993	18,605
May	44,471	19,954	42,274	18,846
June	45,317	20,129	43,123	18,975
July	45,458	19,837	43,432	18,716
Aug.	45,669	19,853	43,518	18,760
Sept.	44,724	20,520	42,730	19,413
Oct.	44,317	20,565	42,522	19,619
Nov.	44,189	20,445	42,305	19,427
Dec.	....	....	....	....
Average	44,690	20,035	42,563	18,939
1953				
Jan.	43,334	19,082	41,974	18,850
Feb.	43,692	19,020	42,448	18,476
Mar.	43,892	19,242	42,784	18,676
Apr.	43,898	18,912	42,794	18,434
May	43,848	19,116	42,950	18,708
June	44,862	19,872	43,839	19,334
July	45,260	19,408	44,236	18,884
Aug.	45,056	19,592	44,242	19,166
Sept.	43,917	19,635	43,149	19,157
Oct.	43,626	19,778	42,889	19,353
Nov.	43,709	19,646	42,782	19,143
Dec.	43,565	19,050	42,328	18,536
Average	44,055	19,363	43,026	18,893
Monthly Averages				
1952	43,455	19,513	42,391	18,902
1951	43,612	19,272	42,490	18,515
1950	44,442	18,657	42,287	17,670
1949	44,075	18,030	41,060	17,049
1948	43,858	17,583	42,428	16,950
1947	43,272	16,896	41,677	16,349

N.A.—Not available.

INDUSTRIAL PRODUCTION

INDEXES OF INDUSTRIAL PRODUCTION

Adjusted for Seasonal Variation

FEDERAL RESERVE BOARD, 1947-49 = 100

Total Industrial Production

	1954	1953	1952	1951
Jan.	125	134	121	122
Feb.	125	134	121	122
Mar.	123	135	121	123
Apr.	123	136	120	122
May	125	137	119	122
June	124	136	118	121
July	123	137	116	119
Aug.	123	136	123	118
Sept.	124	133	129	118
Oct.	126	132	130	116
Nov.	129	129	133	119
Dec.	130	127	133	119
Average	125	134	124	120

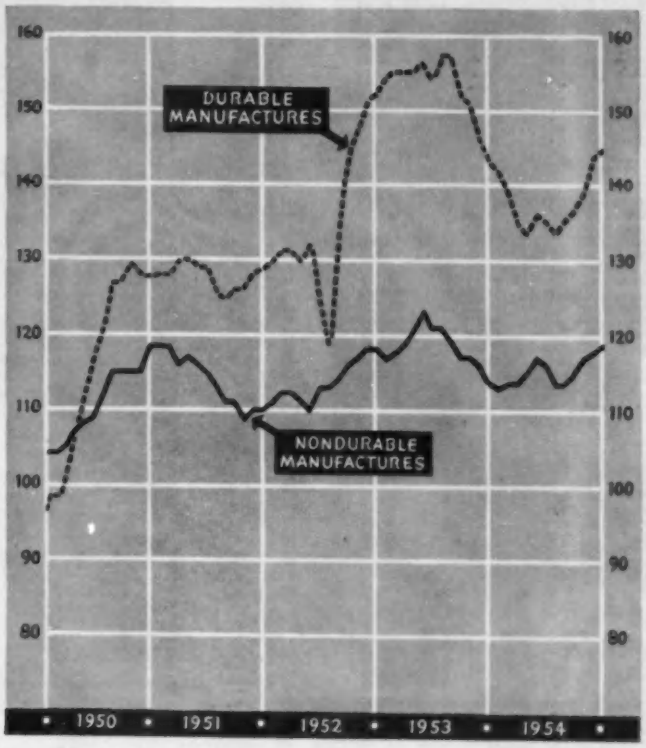
Manufactures

	1954	1953	1952	1951
Jan.	127	136	121	123
Feb.	126	136	121	123
Mar.	125	137	122	123
Apr.	125	138	120	123
May	126	139	121	123
June	125	138	119	122
July	124	139	116	119
Aug.	125	138	125	118
Sept.	126	135	130	118
Oct.	128	134	132	118
Nov.	131	131	135	119
Dec.	132	127	136	120
Average	127	136	125	121

Durable Manufactures

	1954	1953	1952	1951
Jan.	141	154	130	128
Feb.	139	155	131	128
Mar.	135	155	131	130
Apr.	134	155	130	130
May	136	156	132	129
June	135	154	125	129
July	134	157	119	126
Aug.	135	157	135	125
Sept.	136	152	144	126
Oct.	139	151	147	126
Nov.	143	146	151	128
Dec.	145	142	152	129
Average	138	153	136	128

1954 INDUSTRIAL PRODUCTION DECLINES 6%



Transportation Equipment

	1954	1953	1952	1951
Jan.	185	191	140	131
Feb.	179	191	143	133
Mar.	173	190	145	135
Apr.	174	190	146	136
May	178	192	152	137
June	170	188	152	137
July	170	196	126	130
Aug.	166	191	140	132
Sept.	161	186	166	135
Oct.	164	189	177	135
Nov.	184	189	185	140
Dec.	198	182	190	139
Average	175	189	154	135

Nondurable Manufactures

	1954	1953	1952	1951
Jan.	113	117	111	118
Feb.	114	118	112	118
Mar.	114	119	112	116
Apr.	115	121	111	117
May	117	122	110	116
June	116	121	113	116
July	114	121	113	113
Aug.	114	119	114	111
Sept.	115	117	116	111
Oct.	117	117	117	109
Nov.	118	116	118	110
Dec.	119	114	118	110
Average	115	119	114	114

Minerals

	1954	1953	1952	1951
Jan.	111	116	118	112
Feb.	110	115	119	110
Mar.	109	113	117	110
Apr.	109	114	116	112
May	112	116	101	118
June	115	118	109	113
July	110	120	107	114
Aug.	111	119	109	115
Sept.	111	118	118	115
Oct.	112	114	109	118
Nov.	113	111	116	117
Dec.	114	111	117	117
Average	111	115	113	114

Manufacturers' Sales and Inventories

Office of Business Economics, Department of Commerce

	Sales			Inventories[1]		
	All Manufacturing Industries	Durable-goods Industries	Nondurable Goods Industries	All Manufacturing Industries	Durable-goods Industries	Nondurable Goods Industries
1954	$287,780,000,000	$135,914,000,000	$151,866,000,000	$44,102,000,000	$24,428,000,000	$19,674,000,000
1953	302,356,000,000	152,698,000,000	150,658,000,000	46,947,000,000	26,697,000,000	20,250,000,000
1952	276,548,000,000	134,473,000,000	142,075,000,000	44,190,000,000	24,399,000,000	19,791,000,000
1951	266,460,000,000	125,194,000,000	141,265,000,000	42,904,000,000	22,729,000,000	20,175,000,000
1950	231,415,000,000	105,649,000,000	125,766,000,000	34,314,000,000	16,780,000,000	17,534,000,000
1949	196,597,000,000	84,834,000,000	112,163,000,000	28,972,000,000	14,091,000,000	14,882,000,000
1948	211,560,000,000	91,132,000,000	120,427,000,000	31,734,000,000	15,882,000,000	15,851,000,000
1947	191,610,000,000	80,243,000,000	110,666,000,000	28,979,000,000	14,414,000,000	14,565,000,000
1946	151,402,000,000	59,824,000,000	91,568,000,000	24,498,000,000	11,633,000,000	12,865,000,000

[1] Book value at end of period.

WAGES

EARNINGS OF PRODUCTION WORKERS—BUREAU OF LABOR STATISTICS

All Manufacturing

	Average Earnings Hourly	Average Earnings Weekly	"Real" Weekly Earnings†	Average Hrs. per Week
1954				
Jan.	$1.80	$70.92	$61.56	39.4
Feb.	1.80	71.28	61.98	39.6
Mar.	1.79	70.71	61.59	39.5
Apr.	1.80	70.20	61.26	39.0
May	1.81	71.13	61.85	39.3
June	1.81	71.66	62.28	39.6
July	1.80	70.92	61.56	39.4
Aug.	1.79	71.06	61.79	39.7
Sept.	1.81	71.86	62.65	39.7
Oct.	1.81	72.22	63.07	39.9
Nov.	1.83	73.57	64.20	40.2
Dec.	1.83	74.13	64.85	40.5
Avg.	$1.81	$71.64	$62.39	39.6
1953				
Jan.	$1.74	$71.34	$62.63	41.0
Feb.	1.74	71.34	62.91	41.0
Mar.	1.75	71.93	63.32	41.1
Apr.	1.75	71.40	62.80	40.8
May	1.76	71.63	62.83	40.7
June	1.77	72.04	62.92	40.7
July	1.77	71.33	62.19	40.3
Aug.	1.77	71.69	62.34	40.5
Sept.	1.79	71.42	62.00	39.9
Oct.	1.79	72.14	62.61	40.3
Nov.	1.79	71.40	62.26	40.0
Dec.	1.80	72.36	62.98	40.2
Avg.	$1.77	$71.69	$62.64	40.5

Durable Goods

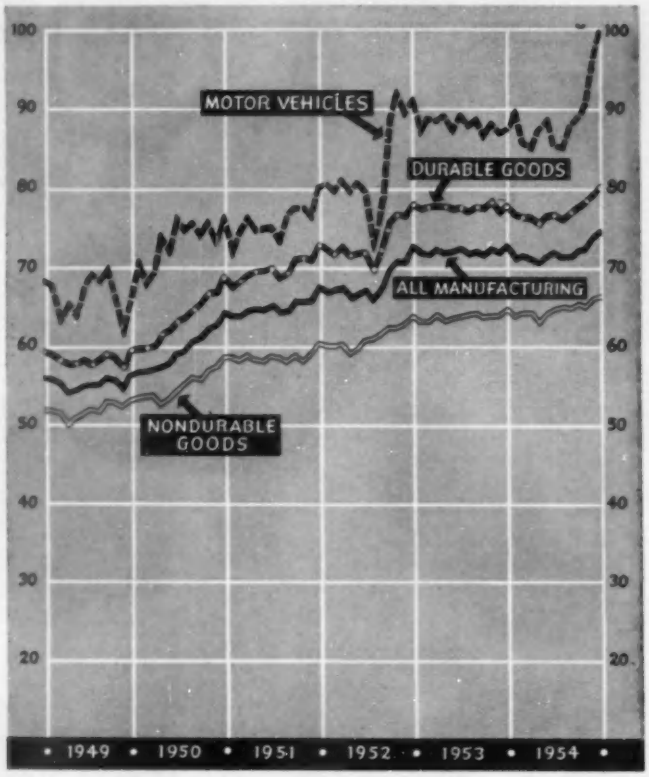
	Average Earnings Hourly	Average Earnings Weekly	"Real" Weekly Earnings†	Average Hrs. per Week
1954				
Jan.	$1.91	$76.59	$66.48	40.1
Feb.	1.90	76.38	66.42	40.2
Mar.	1.90	76.00	66.20	40.0
Apr.	1.90	75.43	65.83	39.7
May	1.91	76.21	66.27	39.9
June	1.91	76.40	66.38	40.0
July	1.91	75.83	65.69	39.7
Aug.	1.91	76.59	66.60	40.1
Sept.	1.93	77.39	67.47	40.1
Oct.	1.93	77.97	68.10	40.4
Nov	1.94	79.16	69.07	40.8
Dec.	1.95	80.15	70.13	41.1
Avg.	$1.92	$77.01	$67.13	40.2
1953				
Jan.	$1.84	$77.10	$67.69	41.9
Feb.	1.85	77.33	68.19	41.8
Mar.	1.85	77.52	68.24	41.9
Apr.	1.86	77.56	68.21	41.7
May	1.86	77.19	67.71	41.5
June	1.87	77.42	67.62	41.4
July	1.88	76.70	66.87	40.8
Aug.	1.88	77.27	67.19	41.1
Sept.	1.90	77.14	66.96	40.6
Oct.	1.90	77.90	67.50	41.0
Nov	1.89	76.73	66.72	40.6
Dec.	1.90	77.52	67.47	40.8
Avg.	$1.87	$77.23	$67.53	41.3

Motor Vehicles (Incl. Parts)

	Average Earnings Hourly	Average Earnings Weekly	"Real" Weekly Earnings†	Average Hrs. per Week
1954				
Jan.	$2.19	$89.79	$77.94	41.0
Feb.	2.17	88.72	74.54	39.5
Mar.	2.15	84.93	72.98	39.5
Apr	2.16	87.26	76.14	40.4
May	2.16	88.34	76.82	40.9
June	2.17	85.28	74.09	39.3
July	2.17	85.06	72.84	39.2
Aug.	2.20	88.00	76.52	40.0
Sept.	2.24	89.15	77.72	39.8
Oct.	2.23	90.54	79.07	40.6
Nov.	2.24	94.98	82.88	42.4
Dec.	2.26	99.67	87.20	44.1
Avg.	$2.19	$88.10	$76.69	40.2
1953				
Jan.	$2.10	$86.94	$76.33	41.4
Feb.	2.12	88.40	77.95	41.7
Mar.	2.11	88.41	77.82	41.9
Apr	2.12	88.83	78.13	41.9
May	2.10	87.15	76.45	41.5
June	2.15	89.23	77.93	41.5
July	2.16	87.91	76.64	40.7
Aug.	2.16	88.58	77.03	41.2
Sept.	2.17	86.58	75.16	39.9
Oct	2.16	88.13	76.37	40.8
Nov.	2.17	87.02	75.67	40.1
Dec.	2.18	87.42	76.08	40.1
Avg.	$2.16	$87.85	$76.80	41.1

†—Weekly earnings adjusted to Consumers' Price Index.

AVERAGE GROSS WEEKLY WAGES



Aircraft and Parts

	Average Earnings Hourly	Average Earnings Weekly	"Real" Weekly Earnings	Average Hrs. per Week	Average Earnings Hourly	Average Earnings Weekly	"Real" Weekly Earnings	Average Hrs. per Week
	1954				1953			
Jan.	$2.05	$83.23	$72.25	40.6	$1.98	$85.73	$75.27	43.3
Feb.	2.07	85.28	74.16	41.2	1.98	85.14	75.08	43.0
Mar.	2.06	84.46	73.57	41.0	1.99	84.18	74.10	42.3
Apr.	2.06	83.43	72.80	40.5	1.98	83.16	73.14	42.0
May	2.06	83.84	72.90	40.7	1.98	82.57	72.43	41.7
June	2.08	84.86	73.73	40.8	1.99	81.99	71.61	41.2
July	2.08	84.66	73.49	40.7	1.99	82.59	72.00	41.5
Aug.	2.09	85.27	74.15	40.8	2.00	83.60	72.70	41.8
Sept.	2.10	85.68	74.70	40.8	2.01	83.21	72.23	41.4
Oct.	2.10	85.47	74.65	40.7	2.02	84.03	72.82	41.6
Nov.	2.12	87.34	76.21	41.2	2.02	84.03	73.07	41.6
Dec.	2.12	87.77	76.79	42.9	2.04	85.27	74.21	41.8
Avg.	$2.08	$85.11	$74.12	40.90	$2.00	$83.80	$73.22	41.9

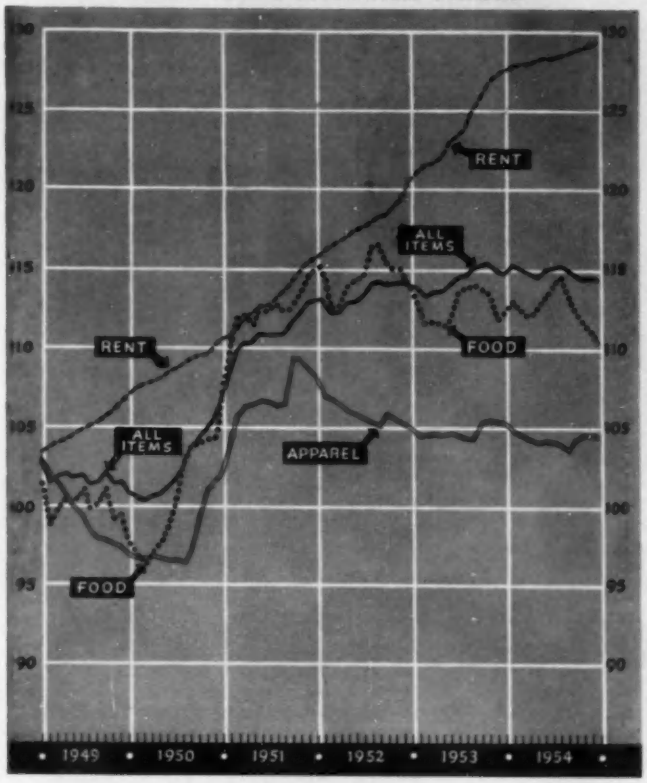
Nondurable Goods

	Average Earnings Hourly	Average Earnings Weekly	"Real" Weekly Earnings	Average Hrs. per Week	Average Earnings Hourly	Average Earnings Weekly	"Real" Weekly Earnings	Average Hrs. per Week
	1954				1953			
Jan.	$1.65	$63.53	$55.15	38.5	$1.58	$62.88	$55.21	39.8
Feb.	1.65	64.02	55.67	38.8	1.58	62.88	55.45	39.8
Mar.	1.65	64.02	55.77	38.8	1.59	63.60	55.89	40.0
Apr.	1.65	62.87	54.86	38.1	1.59	62.81	55.24	39.5
May	1.66	63.91	55.58	38.5	1.60	63.20	55.44	39.5
June	1.66	64.57	56.10	38.9	1.60	63.52	55.48	39.7
July	1.66	64.74	56.20	39.0	1.61	63.76	55.59	39.6
Aug.	1.65	64.68	56.24	39.2	1.61	63.76	55.44	39.6
Sept.	1.66	65.24	56.88	39.3	1.62	63.57	55.18	39.6
Oct.	1.66	65.07	56.83	39.2	1.62	63.67	55.17	39.3
Nov.	1.67	65.97	57.56	39.5	1.63	63.73	55.42	39.1
Dec.	1.67	66.67	58.15	39.8	1.64	64.45	56.09	39.3
Avg.	$1.66	$64.39	$56.25	39.0	$1.61	$63.60	$55.48	39.5

CONSUMERS' PRICE INDEX—BUREAU OF LABOR STATISTICS

Based on Monthly Average of 1947-1949 = 100

TREND OF CONSUMER PRICES



Wholesale Prices of Selected Commodities

Bureau of Labor Statistics' Indices, 1947-1949 = 100

1954	All Commodities	Farm Products	Processed Foods	Textile Products	Metals and Metal Products	Lumber and Wood Products	Machinery and Motive Products
Jan.	110.9	97.8	106.2	96.1	127.2	117.0	124.4
Feb.	110.5	97.7	104.8	95.3	126.2	116.8	124.5
Mar.	110.5	98.4	105.3	95.0	126.3	116.7	124.5
Apr.	111.0	99.4	105.9	94.7	126.8	116.2	124.4
May	110.9	97.9	106.8	94.8	127.1	116.1	124.6
June	110.0	94.8	105.0	94.9	127.1	116.3	124.3
July	110.4	96.2	106.5	95.1	128.0	119.1	124.3
Aug.	110.5	95.8	106.4	95.3	128.6	119.1	124.3
Sept.	110.0	93.6	105.5	95.3	129.1	119.3	124.4
Oct.	109.7	93.1	103.7	95.4	129.7	119.8	124.3
Nov.	110.0	93.2	103.8	95.2	129.9	119.9	125.3
Dec.	109.5	90.0	103.4	95.2	129.8	120.0	125.6
Average	110.3	95.7	105.3	95.2	128.0	118.0	124.6
1953							
Jan.	109.9	89.6	105.5	98.8	124.0	120.5	121.5
Feb.	109.6	87.9	105.2	98.5	124.6	121.1	121.6
Mar.	110.0	89.8	104.1	97.5	125.5	121.7	121.8
Apr.	109.4	87.3	103.2	97.4	125.0	122.2	122.0
May	109.8	87.8	104.3	97.6	125.7	121.8	122.4
June	109.5	86.4	103.3	97.4	126.9	121.5	122.9
July	110.9	87.9	105.5	97.5	129.2	121.1	123.4
Aug.	110.6	86.4	104.8	97.5	129.4	120.6	123.7
Sept.	111.0	88.1	106.6	96.9	128.5	119.2	124.0
Oct.	110.2	85.3	104.7	96.5	127.9	118.1	124.1
Nov.	109.8	83.7	103.8	96.2	127.9	117.3	124.2
Dec.	110.1	84.5	104.3	95.8	127.6	117.4	124.3
Average	110.1	87.0	104.6	97.3	126.8	120.2	123.0

All Items

Month	1954	1953	1952	1951
Jan.	115.2	113.9	113.1	108.6
Feb.	115.0	113.4	112.4	109.9
Mar.	114.8	113.6	112.4	110.3
Apr.	114.6	113.7	112.9	110.4
May	115.0	114.0	113.0	110.9
June	115.1	114.5	113.4	110.8
July	115.2	114.7	114.1	110.9
Aug.	115.0	115.0	114.3	110.9
Sept.	114.7	115.2	114.1	111.6
Oct.	114.5	115.4	114.2	112.1
Nov.	114.6	115.0	114.3	112.8
Dec.	114.3	114.9	114.1	113.1
Average	114.8	114.4	113.5	111.0

Apparel

Month	1954	1953	1952	1951
Jan.	104.9	104.6	107.0	103.8
Feb.	104.7	104.6	106.8	105.6
Mar.	104.3	104.7	106.4	106.2
Apr.	104.1	104.6	106.0	106.4
May	104.2	104.7	105.8	106.6
June	104.2	104.6	105.6	106.6
July	104.0	104.4	105.3	106.3
Aug.	103.7	104.3	105.1	106.4
Sept.	104.3	105.3	105.8	109.3
Oct.	104.6	105.5	105.6	109.2
Nov.	104.6	105.5	105.2	108.5
Dec.	104.3	105.3	105.1	108.1
Average	104.3	104.9	105.8	106.9

Food

Month	1954	1953	1952	1951
Jan.	113.1	113.1	115.0	109.9
Feb.	112.6	111.5	112.6	111.9
Mar.	112.1	111.7	112.7	112.0
Apr.	112.4	111.5	113.9	111.7
May	113.2	112.1	114.3	112.6
June	113.8	113.7	114.6	112.3
July	114.6	113.8	116.3	112.7
Aug.	113.9	114.1	116.6	112.4
Sept.	112.4	113.8	115.4	112.5
Oct.	111.8	113.6	115.0	113.5
Nov.	111.1	112.0	115.0	114.6
Dec.	110.4	112.3	113.8	115.0
Average	112.6	112.8	114.6	112.6

Rent

Month	1954	1953	1952	1951
Jan.	127.8	121.1	116.9	110.6
Feb.	127.9	121.5	116.4	111.3
Mar.	128.0	121.7	116.7	111.9
Apr.	128.2	122.1	116.9	112.2
May	128.3	123.0	117.4	112.5
June	128.3	123.3	117.6	112.7
July	128.5	123.8	117.9	113.1
Aug.	128.6	125.1	118.2	113.6
Sept.	128.8	126.0	118.3	114.2
Oct.	129.0	126.8	118.5	114.8
Nov.	129.2	127.3	119.5	115.4
Dec.	129.4	127.6	120.7	115.6
Average	128.5	124.1	117.9	113.1

Medical Care

Month	1954	1953	1952	1951
Jan.	123.7	119.4	114.7	106.5
Feb.	124.1	119.3	114.8	106.9
Mar.	124.4	119.5	115.7	109.9
Apr.	124.9	120.2	115.9	110.3
May	125.1	120.7	116.1	110.7
June	125.1	121.1	117.8	111.0
July	125.2	121.5	118.0	111.0
Aug.	125.5	121.8	118.1	111.2
Sept.	125.7	122.0	118.8	111.8
Oct.	125.9	122.8	118.9	112.6
Nov.	126.1	123.3	118.9	113.1
Dec.	126.3	123.6	119.3	114.3
Average	125.2	121.3	117.2	111.1

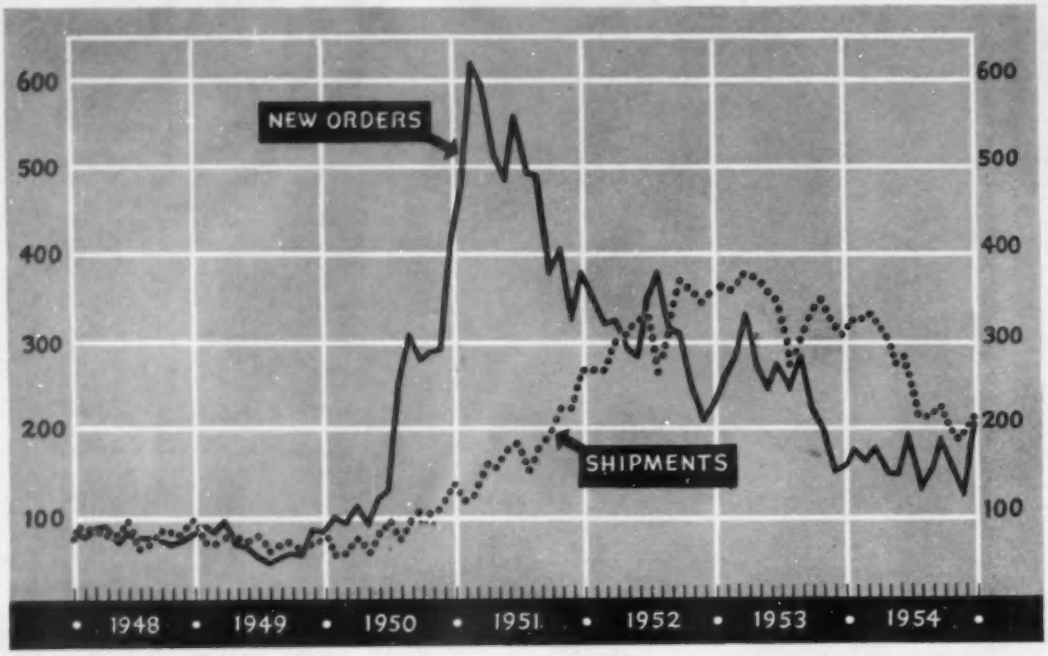
Transportation

Month	1954	1953	1952	1951
Jan.	130.5	129.3	122.8	114.7
Feb.	129.4	129.1	123.7	115.8
Mar.	129.0	129.3	124.4	116.9
Apr.	129.1	129.4	124.8	117.3
May	129.1	129.4	125.1	117.6
June	128.9	129.4	126.3	117.5
July	126.7	129.7	126.8	117.8
Aug.	126.6	130.0	127.0	118.7
Sept.	126.4	130.7	127.7	119.7
Oct.	125.9	130.7	128.4	120.5
Nov.	127.6	130.1	128.9	122.1
Dec.	127.3	128.9	128.9	122.2
Average	128.0	129.7	126.2	118.4

MACHINE TOOLS

INDEX OF MACHINE TOOL NEW ORDERS AND SHIPMENTS

Based on Monthly Average of 1945-1947 = 100



Index of Machine Tool Shipments

As reported by the National Machine Tool Builders' Assn.

(Monthly Average of 1945-1946-1947 = 100)

Month	1954	1953	1952	1951	1950	1949	1948
Jan.	319.4	361.6	266.6	114.3	53.8	68.8	75.2
Feb.	323.1	354.5	279.6	123.8	56.1	70.3	87.1
Mar.	327.2	375.9	299.5	158.9	75.3	75.8	83.6
Apr.	302.7	372.7	307.9	167.7	61.6	74.7	82.0
May	270.3	356.0	323.0	175.1	82.5	72.3	82.6
June	276.3	342.2	330.8	182.8	91.9	79.0	94.4
July	205.7	267.6	259.7	144.7	68.3	60.7	62.4
Aug.	203.7	299.6	317.0	178.9	95.7	67.3	69.8
Sept.	213.4	328.3	368.2	189.8	101.6	67.6	84.7
Oct.	191.0	348.4	357.8	221.3	100.9	62.3	80.4
Nov.	179.5	320.2	342.5	226.0	110.9	67.6	76.2
Dec.	203.6	301.4	355.0	264.7	135.7	75.7	96.9
Monthly Avg.	251.3	335.7	317.3	178.2	86.1	70.2	81.3

Index of Machine Tool New Orders

As reported by the National Machine Tool Builders' Assn.

(Monthly Average of 1945-1946-1947 = 100)

Month	1954	1953	1952	1951	1950	1949	1948
Jan.	173.5	255.8	347.8	475.4	99.7	87.0	83.1
Feb.	159.8	282.1	318.8	615.3	89.2	80.9	77.3
Mar.	169.6	327.0	324.3	590.3	107.4	93.5	86.3
Apr.	142.8	276.8	293.5	516.1	98.9	70.1	86.3
May	139.5	246.4	284.6	483.0	116.4	63.7	73.5
June	185.2	273.4	342.9	558.8	124.1	83.6	83.4
July	124.7	247.3	276.3	490.6	253.1	48.9	74.0
Aug.	147.9	286.9	311.1	488.9	305.1	51.5	73.7
Sept.	150.9	223.7	302.4	380.2	280.6	57.7	73.1
Oct.	148.9	198.7	243.3	403.9	259.6	56.8	67.4
Nov.	119.5	146.6	205.4	330.5	291.9	84.3	72.2
Dec.	203.2	149.8	225.2	376.5	410.1	82.5	76.7
Monthly Avg.	157.9	243.6	287.9	475.8	205.5	69.1	77.2

Machine Tool Shipments by Class of Products

As reported by the Industry Division, Bureau of the Census

Type of Machine Tool	1953 Number	1953 Value	1952 Number	1952 Value	1951 Number	1951 Value	1950 Number	1950 Value
Boring Machines	4,650	$165,648,000	4,374	$152,341,000	2,515	$ 75,068,000	1,363	$ 29,402,000
Broaching Machines	799	21,874,000	1,105	22,678,000	681	11,975,000	374	4,852,000
Drilling Machines	....	114,258,000	....	108,948,000	19,287	70,916,000	9,917	33,129,000
Gear-cutting and Finishing	2,546	44,891,000	2,725	47,462,000	2,452	38,336,000	1,402	19,819,000
Grinding and Polishing	93,504	219,287,000	89,146	210,124,000	109,782	121,115,000	79,274	60,859,000
Lathes	43,077	312,165,000	44,525	281,587,000	43,107	170,529,000	30,251	89,716,000
Milling Machines	17,525	196,124,000	16,252	158,331,000	11,287	70,257,000	6,975	26,452,000
Planers	164	10,445,000	155	8,641,000	111	5,966,000	84	3,035,000
Shapers (except gear)	1,495	10,932,000	1,493	9,755,000	1,096	6,095,000	794	3,297,000
All Other Machine Tools	....	75,735,000	....	76,013,000	....	59,465,000	....	35,051,000
Total	....	$1,169,359,000	....	$1,076,880,000	....	$629,722,000	....	$315,743,000

Machine Tool Shipments by States

Industry Division, Bureau of the Census

Division and State	1953 Value	1953 % of Total[1]	1952 Value	1952 % of Total	1951 Value	1951 % of Total
New England						
Connecticut	$124,320,000	10.63	$ 110,673,000	10.23	$ 62,845,000	9.99
Massachusetts	95,546,000	8.17	109,845,000	10.20	61,872,000	9.83
Rhode Island	33,299,000	2.85	39,396,000	3.66	16,825,000	2.67
New Hampshire and Vermont	56,432,000	4.83	55,791,000	5.18	35,789,000[2]	5.69
Total	$309,597,000	26.48	$ 315,705,000	29.32	$177,337,000	28.18
Middle Atlantic						
New Jersey	$ 8,254,000	.71	$ 5,445,000	.51	$ 16,277,000	2.59
New York	51,630,000	4.41	45,290,000	4.21	32,195,000	5.23
Pennsylvania	33,937,000	2.91	29,316,000	2.72	20,598,000	3.27
Total	$ 93,911,000	8.03	$ 83,048,000	7.71	$ 69,773,000	11.09
East North Central						
Michigan	$115,669,000	9.89	$ 108,226,000	10.05	$ 70,389,000	11.19
Ohio	381,993,000	32.67	354,876,000	32.96	191,965,000	30.48
Wisconsin	109,241,000	9.34	80,536,000	7.48	34,412,000	5.47
Illinois	102,575,000	8.80	98,655,000	9.16	53,662,000	8.53
Indiana	23,014,000	1.97	6,680,000	.62	13,019,000	2.07
Total	$732,792,000	62.67	$ 648,983,000	60.26	$363,358,000	57.73
West North Central						
Missouri	$ 9,696,000	.83	$ 7,722,000	.72	$ 4,012,000	.64
Iowa, Minnesota, Nebraska, South Dakota	9,876,000	.84	10,366,000	.96	7,920,000	1.25
Total	$ 19,572,000	1.67	$ 18,088,000	1.68	$ 11,932,000	1.89
Pacific (California and Washington)	$ 7,528,000	.64	$ 6,437,000	.60	$ 3,216,000	.51
All Other States:						
Del., Fla., Ky., Md., N. C., S. C., Tenn., Texas	$ 5,959,000	.51	$ 4,619,000[3]	.43	$ 3,748,000	.60
Total—United States	$1,169,359,000	100.00	$1,076,880,000	100.00	$629,344,000	100.00

1—Excludes North and South Carolina 2—Includes Maine.

Metalworking Machinery (Except Machine Tools)

Shipments and Their Value F.O.B. Factory

As reported by the Industry Division, Bureau of the Census

Class of Product	1953 Number	1953 Value	1952 Number	1952 Value	1951 Number	1951 Value
Presses (including Forging)	19,840	$152,210,000	17,128	$120,177,000	20,033	$106,626,000
Forging Machines (except Presses)	1,077	16,913,000	1,262	16,266,000	1,367	15,264,000
Punching and Shearing Machines (Power)	4,361	28,194,000	4,657	29,429,000	4,795	26,549,000
Punching and Shearing Machines (Manual)	4,925	1,214,000	4,460	1,113,000	5,390	1,849,000
Bending and Forming Machines (Power)	6,340	32,471,000	6,516	35,492,000	6,372	27,409,000
Bending and Forming Machines (Manual)	17,285	2,579,000	15,971	2,266,000	15,140	3,031,000
Riveting Machines (except hand-held portable)	3,694	4,911,000	4,556	7,327,000	3,354	4,279,000
Metal-Container making machines	1,691	15,849,000	1,297	14,003,000	1,974	15,340,000
Die-Casting Machines	341	6,358,000	229	3,422,000	294	4,707,000
Wire-Weaving and Fabricating Machines	557	2,262,000	865	3,792,000	913	4,487,000
Drawing Machines and Draw Benches	472	6,644,000	526	5,637,000	510	4,977,000
Total—Metalworking Machinery	....	$272,605,000	....	$249,964,000	....	$214,107,000

Value of Machine Tool Shipments

As reported by N.M.T.B.A.

Year	Value
1939	$ 260,000,000
1940	440,000,000
1941	775,000,000
1942	1,320,000,000
1943	1,180,000,000
1944	497,000,000
1945	423,700,000
1946	324,800,000
1947	396,000,000
1948	388,450,000
1949	249,150,000
1950	305,550,000
1951	632,256,000
1952	1,125,900,000
1953	1,191,200,000
1954	891,750,000

Small Cutting Tools for Machine Tools and Metalworking Machinery

Value of shipments at Plant

As reported by the Industry Division, Bureau of the Census

Type of Tool	
Broaches	$ 10,262,000
Drills	40,701,000
Reamers	15,125,000
Gear hobs	6,263,000
Gear cutters other than hobbing	7,832,000
Milling cutters	28,822,000
Turning, planer, and shaper tools	19,582,000
Threading tools and dies	33,466,000
Drop-forging dies	4,502,000
Die-casting dies	8,366,000
Other small cutting tools	20,477,000
Small cutting tools, n.r.t.	2,895,000
Total—Small Cutting Tools—1947	$204,233,000
Total—Small Cutting Tools—1951	$430,566,000
Total—Small Cutting Tools—1952	$499,930,000
Total—Small Cutting Tools—1953	$471,826,000

MATERIALS HANDLING



Conveyors and Conveying Equipment

Except overhead traveling cranes and monorail systems

Industry Division, Bureau of the Census

Type	Quantity (Units)	Value f.o.b. Plant
Farm elevators, portable		
Single chain	18,732	$ 2,888,000
Double chain	18,032	5,931,000
Auger type	19,250	2,356,000
Farm, elevators, stationary	1,301	602,000
Parts and attachments, and those not reported by type	....	4,363,000
Conveyors and conveying systems	....	142,572,000
Gravity conveyors (chute wheel and roller)	....	10,262,000
Power conveyors (excluding overhead trolley systems, pneumatic tube systems, and portable conveyors)	....	17,664,000
Overhead trolley conveyor systems	....	10,304,000
Pneumatic tube systems (incl. foot-power units)	....	2,200,000
Portable conveyors (except farm)	....	14,583,000
Other conveyors and conveying systems	....	87,020,000
Parts, attachments, and accessories sold separately	....	34,754,000
Conveyors and conveying equipment, not reported by type	....	2,364,000
Total—1947	....	$196,832,000
Total—1950	....	$181,137,000
Total—1951	....	$254,732,000
Total—1952	....	$280,737,000
Total—1953	....	$299,765,000

Shipments of Industrial Electric Trucks and Tractors

	1954	1953	1952	1951	1950
Jan.	523	704	658	440	139
Feb.	467	779	681	461	183
Mar.	473	833	702	595	229
Apr.	366	732	642	397	204
May	445	677	653	464	203
June	445	945	648	606	268
July	413	673	394	538	199
Aug.	357	626	564	591	237
Sept.	357	797	516	447	265
Oct.	348	877	588	587	290
Nov.	359	677	622	738	242
Dec.	394	673	741	673	291
Total	4,947	8,992	7,409	6,525	2,860

Industrial Trucks, Tractors, Trailers & Portable Elevators

Industry Division, Bureau of the Census

Type	Quantity (Units)	Value f.o.b. Plant
Powered trucks, operator walking	7,469	$ 8,053,000
Powered trucks, operator riding	20,385	66,427,000
Fork trucks	17,943	56,970,000
Electric (storage battery and gasoline-electric powered)	3,522	15,212,000
Gasoline powered	14,421	41,758,000
Other trucks	2,442	9,467,000
Electric (storage battery and gasoline-electric powered)	1,300	5,667,000
Gasoline powered	1,142	3,800,000
Tractors	2,460	3,890,000
Electric (storage battery and gasoline-electric powered)	199	367,000
Gasoline powered	2,261	3,523,000
Portable elevators[1]	4,653	3,162,000
Hand trucks and trailers	....	29,430,000
Hand lift	....	8,373,000
Other[2]	....	21,057,000
Parts, attachments, and miscellaneous equipment, sold separately[3]	....	41,572,000
Industrial trucks and tractors, not reported by type	....	4,210,000
Total—1947	....	$156,754,000
Total—1951	....	$285,248,000
Total—1952	....	$322,166,000
Total—1953	....	$321,843,000

[1] Does not include farm elevators. [2] Includes two-wheel, four-wheel, dollies, and platform trucks. [3] Includes pallets and skids.

Shipments of Paper Product Shipping Containers

Industry Div., Bureau of the Census

Class of Products	Value at Plant
Shipping Sacks	
Total—1947	$ 153,209,000
Total—1951	$ 251,303,000
Total—1952	$ 224,011,000
Total—1953	$ 241,931,000
Shipping Containers	
Total—1947	$ 832,858,000
Total—1951	$1,160,362,000
Total—1952	$1,068,745,000
Total—1953	$1,180,963,000
Folding Boxes and Cartons	
Total—1947	$ 401,447,000
Total—1951	$ 667,261,000
Total—1952	$ 626,153,000
Total—1953	$ 672,488,000
Set-up Boxes	
Total—1947	$ 210,671,000
Total—1951	$ 226,814,000
Total—1952	$ 224,086,000
Total—1953	$ 236,634,000
Total—Sacks, Containers, Boxes	
1947	$1,599,185,000
1951	$2,305,740,000
1952	$2,142,995,000
1953	$2,332,016,000

Shipments of Steel Shipping Containers

Industry Div., Bureau of the Census

	Barrels and Drums	Packages, Kegs and Pails
	1954	
Jan.	2,384,043	5,516,616
Feb.	2,496,433	5,277,354
Mar.	2,850,807	6,035,540
Apr.	2,818,772	6,192,941
May	2,780,533	5,771,726
June	3,046,675	6,358,531
July	2,734,220	6,255,044
Aug.	2,576,900	6,027,646
Sept.	2,728,324	5,987,587
Oct.	2,762,807	5,742,110
Nov.	2,679,105	5,120,832
Dec.	....	....
Total	29,858,619	64,285,927
	1953	
Jan.	2,667,360	4,988,480
Feb.	2,451,657	4,921,728
Mar.	2,838,068	5,579,692
Apr.	3,028,087	6,627,028
May	2,970,482	6,317,565
June	3,044,479	6,546,447
July	2,870,318	6,430,746
Aug.	2,780,798	5,737,678
Sept.	2,786,729	6,137,359
Oct.	2,964,237	6,161,262
Nov.	2,664,654	5,297,990
Dec.	2,828,392	5,141,377
Total	33,895,261	69,887,352
1952	34,246,252	64,068,727
1951	41,259,323	76,735,970
1950	36,728,808	69,157,839
1949	31,700,472	55,428,143

Value of Shipments of Excavating and Earthmoving Equipment

Industry Division, Bureau of the Census

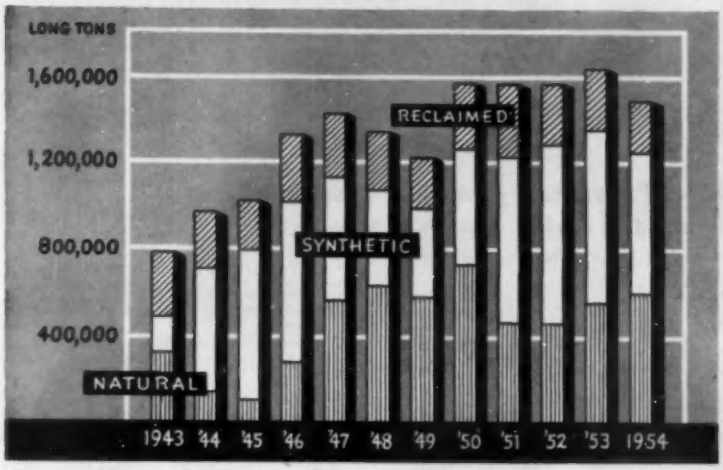
Class of Product	1954	1953	1952	1951	1950
Power cranes and shovels	N.A.	$253,318,000	$199,821,000	$180,430,000	$109,006,000
Road construction and maintenance machinery	$118,979,000	119,674,000	160,068,000	151,779,000	117,540,000
Construction machinery for mounting on tractors	75,877,000	78,440,000	75,829,000	64,816,000	58,769,000
Tracklaying tractors*	46,501,000	228,696,000	280,841,000	263,579,000	223,042,000
Wheel-type tractors (contractors off-highway type)*	267,918,000	43,681,000	59,847,000	55,238,000	24,769,000
Trucks, truck tractors, and trailers, off-highway types	25,126,000	31,184,000	32,805,000	36,840,000	22,856,000
Portable well and blast hole drills	8,615,000	8,002,000	6,769,000	5,818,000	4,472,000
Other excavating and earth moving equipment	2,045,000	2,236,000	7,102,000	6,208,000	1,692,000
Total	$543,252,000	$865,231,000	$823,082,000	$764,958,000	$314,325,000

N.A.—Not available. (1)—Included in road construction and maintenance machinery for mounting on tractors.
*—Also included in data for "Shipments of Farm and Non-Farm Tractors" found on page 96.

RUBBER

U. S. CONSUMPTION OF RUBBER

Natural, Synthetic and Reclaimed



Production, Consumption & Stocks of Synthetic Rubber

Long Tons

Month and Year	Production	Consumption	Stocks, End of Month*
1954			
Jan.	57,299	50,173	180,839
Feb.	53,356	49,060	185,405
Mar.	55,835	56,060	184,284
Apr.	47,581	53,654	174,983
May	46,554	52,628	167,583
June	45,954	57,195	157,172
July	46,964	41,552	162,944
Aug.	48,507	42,051	170,159
Sept.	51,384	53,879	161,663
Oct.	55,644	58,309	161,167
Nov.	55,013	57,287	156,905
Dec.	58,456	63,509	150,298
Total	622,352	635,356	....
Yearly Totals			
1953	846,461	783,702	176,148
1952	798,566	807,037	115,987
1951	845,160	758,892	129,953
1950	476,184	538,289	52,758
1949	393,696	414,381	98,042
1948	488,340	442,072	115,111
1947	508,704	559,666	82,366
1946	740,028	761,699	114,868
1945	820,368	693,580	198,889
1944	762,663	566,670	95,446

*—Or December 31 of each year.

U. S. Consumption of Natural, Synthetic and Reclaimed Rubber

Chemical and Rubber Division, Business and Defense Service Administration

All Data in Long Tons

Period	Dry Natural Rubber	Natural Rubber Latex	U. S. Synthetic Rubber: GR-S	Butyl	Neoprene	N-Type	S-Type	Total U. S. Synthetic	Imported Synthetic: S-Type	Butyl	Total Natural & Synthetic	Reclaimed	Grand Total
1954													
January	41,078	5,882	27,707	5,390	4,774	1,272	137	49,280	845	48	97,133	19,114	116,247
February	41,302	5,595	26,765	5,659	4,437	1,190	146	48,227	796	37	95,957	19,461	115,418
March	47,099	6,610	42,074	6,266	5,177	1,447	171	55,135	891	24	109,769	22,882	132,651
April	45,559	5,892	40,194	6,140	4,694	1,395	154	52,577	976	101	105,105	21,883	126,988
May	45,429	5,969	40,030	5,494	4,486	1,366	116	51,491	1,029	109	104,026	20,536	124,562
June	48,369	5,884	42,782	5,937	4,769	1,491	131	56,110	1,061	24	111,448	22,321	133,769
July	33,596	4,298	31,474	4,107	3,499	1,145	125	40,350	1,201	1	79,446	16,301	95,747
August	32,841	5,228	30,800	3,545	4,647	1,439	87	40,518	1,509	24	80,120	17,660	97,780
September	45,509	6,903	40,204	5,080	5,049	1,493	79	51,905	1,915	58	106,290	19,926	126,216
October	48,443	7,827	45,002	4,633	4,921	1,604	97	56,257	1,964	78	114,279	22,098	136,377
November	45,704	7,622	44,429	3,904	5,276	1,635	121	55,365	1,859	63	110,613	22,321	132,934
December	47,181	8,010	50,353	4,408	5,202	1,476	147	61,586	1,829	94	118,700	24,275	142,975
Total, 1954	522,110	75,420	482,814	60,563	56,971	16,953	1,510	618,811	15,875	670	1,232,886	248,778	1,481,664
1953													
January	41,669	6,097	57,472	6,888	5,516	1,468	6	71,290	1,311	209	120,576	25,356	145,932
February	39,569	5,642	54,230	6,865	5,122	1,270	23	67,510	1,227	151	114,119	24,098	138,217
March	44,390	6,317	61,400	7,777	5,850	1,449	36	76,512	1,255	136	128,610	27,334	155,944
April	43,438	5,937	60,546	7,931	5,908	1,375	41	75,801	1,294	126	126,596	26,483	153,079
May	41,494	5,395	57,037	7,178	5,542	1,262	37	71,056	1,031	147	119,123	25,213	144,336
June	42,570	5,654	56,390	7,275	5,677	1,381	39	70,762	833	156	119,975	24,637	144,612
July	35,829	5,100	48,056	6,476	4,581	1,186	51	60,344	815	140	105,228	23,414	128,642
August	38,529	5,303	46,272	5,441	5,357	1,315	75	58,460	671	110	102,973	22,656	125,630
September	39,721	5,504	45,405	5,527	5,497	1,391	102	57,832	760	69	103,877	22,409	126,286
October	40,847	5,897	45,160	5,462	5,443	1,416	161	57,582	889	44	105,259	21,944	127,203
November	38,017	5,234	40,749	4,886	4,911	1,236	115	51,897	740	33	95,921	19,638	115,559
December	37,005	5,395	39,037	4,763	4,836	1,240	134	50,010	847	45	92,302	18,858	112,160
Total, 1953	486,098	67,375	611,748	76,469	65,900†	16,929†	760	771,806†	11,673	1,357	1,338,300†	285,050†	1,623,350†
Yearly Totals													
1952	466,279	53,567	648,816	68,991	55,522	13,866	259	787,454	17,345	2,238	1,261,413	280,002	1,541,415‡
1951	467,265	46,750	617,200	68,034	48,887	12,066	1,483	748,650	7,781	2,466	1,214,298	246,121	1,460,419‡
1950	664,130	56,126	358,427	61,372	43,781	11,330	7,069	512,579	20,734	4,976	1,258,557	303,733	1,562,290
1949	536,405	36,117	299,420	50,855	31,753	8,827	6,284	397,139	15,432	1,809	986,902	222,679	1,211,582
1948	598,843	28,489	334,223	54,856	32,118	8,771	2,646	430,618	7,440	4,014	1,069,404	261,113	1,330,517
1947	548,752	13,909	446,316	66,858	37,702	4,536	2,272	559,666	....	....	1,122,327	288,395	1,410,722
1946	271,883	5,714	631,495	79,228	44,357	5,968	721	761,699	....	....	1,039,296	275,410	1,314,706
1945	101,543	1,886	598,434	43,012	42,396	8,029	1,711	692,580	....	....	799,009	241,036	1,040,045

†—Will not add up to totals shown due to year end adjustment. ‡—Totals include data for Uncured Scrap.

STEEL

Steel Production by Grade of Steel

As reported by The American Iron & Steel Institute

Year	CARBON Net Tons	CARBON % of Total	ALLOY Net Tons	ALLOY % of Total	STAINLESS Net Tons	STAINLESS % of Total	TOTAL Net Tons	TOTAL % of Total
1954*	80,262,602	91.0	7,151,263	8.1	796,786	0.9	88,211,653	100
1953	101,281,525	90.8	9,279,117	8.3	1,049,077	0.9	111,609,719	100
1952	84,023,288	90.2	8,264,587	8.8	920,164	1.0	93,168,039	100
1951	95,076,261	90.4	9,196,857	8.7	923,730	0.9	105,196,848	100
1950	88,265,970	91.1	7,737,796	8.0	832,309	0.9	96,836,075	100
1949	72,050,607	92.4	5,462,476	7.0	455,023	0.6	77,798,176	100
1948	80,159,356	90.4	7,863,726	9.0	617,378	0.6	88,640,470	100
1947	77,465,640	91.2	6,903,298	8.2	519,933	0.6	84,894,071	100
1946	60,525,529	91.0	5,527,093	8.3	550,097	0.7	66,602,724	100
1945	71,053,937	89.1	8,104,507	10.2	542,904	0.7	79,701,648	100

*Estimated.

Steel Ingot Production, Tons

As reported by The American Iron & Steel Institute

Month	1954 Production	1954 % of Cap.	1953 Production	1953 % of Cap.	1952 Production	1952 % of Cap.
Jan.	7,951,456	78.3	9,897,962	99.1	9,137,218	99.3
Feb.	7,082,237	74.3	8,932,779	99.1	8,668,216	100.7
Mar.	7,289,600	69.0	10,168,995	101.8	9,405,290	102.2
Apr.	6,970,937	68.1	9,545,526	98.7	7,992,140	89.7
May	7,472,726	70.7	9,997,080	100.1	8,306,642	89.2
June	7,363,654	72.0	9,404,479	97.2	1,639,789	18.4
July	6,627,597	62.9	9,275,675	93.1	1,627,446	17.7
Aug.	6,666,907	63.1	9,405,580	94.2	8,499,725	92.4
Sept.	6,507,483	66.7	8,883,428	92.1	9,063,287	102.0
Oct.	7,701,533	72.9	9,462,722	94.7	9,808,084	106.6
Nov.	8,089,427	79.1	8,690,062	89.9	9,440,128	105.9
Dec.	8,247,073	78.6	7,946,328	79.7	9,691,074	105.6
Total	88,311,652	71.0	111,609,719	94.9	93,168,039	85.8

Shipments of Steel Products by Market Classifications

All grades including Carbon, Alloy, and Stainless

As reported by the American Iron and Steel Institute

Consuming Industries	1954 Net Tons	1954 % of Total	1953 Net Tons	1953 % of Total	1952 Net Tons	1952 % of Total	1951 Net Tons	1951 % of Total
Automotive								
Vehicles and parts	7,560,625	11.97	8,681,313	10.83	6,101,908	8.98	6,929,513	8.76
Parts, accessories and supplies	3,901,398	6.18	5,515,336	6.88	4,325,480	6.36	5,531,945	7.01
Forgings	330,966	.52	464,126	.58	423,409	.62	530,898	.66
Tractors	452,830	.72	598,549	.75	594,341	.87	698,289	.88
Aircraft	88,848	.14	161,043	.20	136,337	.20	150,779	.19
Total—Automotive and Aircraft	12,334,667	19.53	15,423,367	19.24	11,581,475	17.03	13,831,424	17.52
Warehouses and Distributors	11,393,470	18.01	14,878,859	18.57	13,328,642	19.60	14,399,432	18.24
Construction, incl. Maintenance	8,634,987	13.67	9,918,203	12.37	7,800,619	11.47	9,583,500	12.14
Containers	5,870,618	9.30	6,051,214	7.55	5,550,625	8.16	6,523,954	8.27
Machinery, Ind. Equip. & Tools (less Tractors)	3,064,208	4.85	3,730,055	4.65	3,201,255	4.71	3,546,878	4.49
Contractors' Products	2,969,812	4.70	3,324,216	4.15	2,612,071	3.84	3,080,273	3.90
Export	2,533,883	4.01	2,679,731	3.34	3,271,200	4.81	2,764,411	3.50
Rail Transportation	2,457,297	3.89	4,787,830	5.98	3,986,029	5.86	5,781,589	7.33
Steel for Converting and Processing	2,453,703	3.88	3,513,976	4.38	3,037,146	4.47	4,186,151	5.30
Other Domestic & Commercial Equipment	1,742,080	2.76	2,086,976	2.60	1,562,458	2.30	2,030,669	2.57
Electrical Machinery and Equipment	1,720,607	2.75	2,111,879	2.63	1,609,461	2.37	2,021,123	2.56
Appliances, Utensils and Cutlery	1,441,461	2.28	2,045,749	2.55	1,359,227	2.00	1,836,807	2.33
Agricultural	1,189,199	1.88	1,393,247	1.74	1,347,942	1.98	1,638,456	2.08
Ordnance and Other Military	964,440	1.53	2,690,880	3.36	2,095,593	3.08	1,200,211	1.52
Bolts, Nuts, Rivets and Screws	962,572	1.52	1,341,606	1.67	1,297,486	1.91	1,598,795	2.03
Forgings (Other than Automotive)	832,876	1.32	1,444,839	1.80	1,434,157	2.11	1,550,151	1.96
Oil and Gas Drilling	585,562	.92	755,714	.94	768,208	1.13	834,632	1.06
Shipbuilding and Marine Equipment	501,231	.79	872,209	1.10	1,028,554	1.51	884,210	1.12
Mining, Quarrying and Lumbering	201,624	.32	324,380	.40	309,628	.46	374,769	.47
Non-Reporting Companies	675,019	1.08	937,861	1.18	822,736	1.20	1,261,575	1.61
Total Shipments	63,152,726	100.00	80,151,893	100.00	68,003,612	100.00	78,928,950	100.00

Distribution of Carbon, Alloy and Stainless Steel by Market Classifications—1954 (9 Months)

As reported by the American Iron and Steel Institute

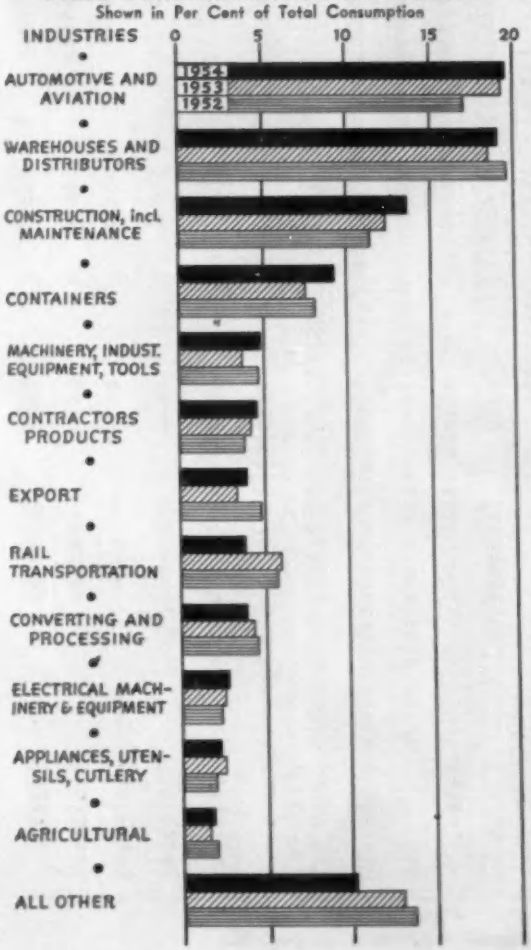
Consuming Industries	CARBON STEEL Net Tons	CARBON STEEL % of Total	ALLOY STEEL Net Tons	ALLOY STEEL % of Total	STAINLESS STEEL Net Tons	STAINLESS STEEL % of Total
Automotive						
Vehicles and Parts	4,780,672	10.76	458,121	17.09	24,817	7.71
Parts, Accessories and Supplies	2,359,389	5.08	315,031	11.75	35,205	10.93
Forgings	119,966	.27	108,232	4.04	39	.01
Tractors	275,547	.62	36,576	1.36	27	.01
Aircraft	24,043	.05	28,679	1.07	14,117	4.38
Total—Automotive and Aircraft	7,459,617	16.78	946,649	35.31	74,205	23.04
Warehouses and Distributors	8,687,731	19.55	294,319	10.98	87,953	27.31
Construction, including Maintenance	6,739,232	15.16	48,697	1.83	3,780	1.17
Containers	4,897,998	11.00	14,056	.53	1,356	.42
Contractors' Products	2,206,807	4.97	9,750	.36	6,453	2.00
Machinery, Inc. Equip and Tools (less Tractors)	2,052,939	4.62	244,178	9.11	20,804	6.46
Rail Transportation	1,972,463	4.44	49,084	1.83	3,354	1.04
Export	1,805,457	4.06	78,259	2.92	10,747	3.34
Steel for Converting and Processing	1,658,626	3.73	43,838	1.64	20,119	6.25
Other Domestic and Commercial Equipment	1,255,781	2.83	11,934	.44	8,679	2.69
Appliances, Utensils, and Cutlery	988,449	2.22	14,559	.54	22,039	6.84
Electrical Machinery and Equipment	958,224	2.16	300,974	11.22	5,182	1.61
Agricultural	903,203	2.03	19,164	.71	308	.10
Ordnance and Other Military	645,853	1.45	89,552	3.34	2,301	.71
Bolts, Nuts, Rivets, and Screws	636,260	1.43	31,664	1.18	3,701	1.15
Oil and Gas Drilling	367,735	.83	104,758	3.91	427	.13
Forgings (other than Automotive)	348,868	.78	242,475	9.03	6,750	2.10
Shipbuilding and Marine Equipment	333,545	.75	42,862	1.60	1,342	.42
Mining, Quarrying and Lumbering	143,842	.32	9,999	.37	165	.05
Shipments of Non-Reporting Companies	392,868	.89	83,456	3.11	42,388	13.17
Total—All Groups	44,446,813	100.00	2,681,367	100.00	322,053	100.00

WEEKLY STEEL PRODUCTION



STEEL CONSUMPTION BY INDUSTRIES

Shown in Per Cent of Total Consumption



1954 Shipments of Nonferrous Castings

Industry Division, Bureau of the Census.

All data in Thousands of Pounds.

Month	Copper	Aluminum	Zinc	Magnesium	Lead
January	71,437	51,446	40,296	2,451	1,514
February	68,849	51,213	37,660	2,194	1,303
March	76,480	56,184	42,591	2,497	1,335
April	72,900	53,006	38,968	2,068	1,559
May	67,859	47,663	36,793	1,738	1,529
June	70,777	48,061	40,708	2,034	1,712
July	56,250	39,636	28,306	1,924	1,391
August	68,891	42,429	34,639	2,157	1,726
September	68,267	46,349	36,594	2,059	1,625
October	70,276	52,901	39,072	2,092	1,784
November	70,020	55,224	48,437	2,161	1,355
December	72,421	62,752	50,177	2,287	1,563
Total	834,587	607,764	474,741	25,572	18,396

Shipments of Magnesium Mill Products

Industry Division, Bureau of the Census

All data in Thousands of Pounds

Month	1954	1953	1952	1951
January	972	1,213	1,646	1,522
February	1,055	1,454	1,750	1,459
March	1,136	1,601	1,723	1,889
April	892	1,708	1,756	1,531
May	1,129	1,699	1,786	1,716
June	1,312	1,192	1,427	1,643
July	1,032	1,589	1,390	1,391
August	1,111	1,433	1,438	1,497
September	1,183	1,254	1,399	1,461
October	1,002	1,409	1,408	1,773
November	1,243	1,314	1,177	1,645
December	1,673	919	1,440	1,533
Total	13,743	16,885	18,249	19,090

Net Shipments of Aluminum Mill Products

Industry Division, Bureau of the Census

In Thousands of Pounds

Month	1954	1953	1952	1951
January	153,920	188,445	149,145	167,793
February	145,835	186,155	146,306	149,692
March	170,010	214,871	153,641	164,315
April	174,176	220,025	159,855	161,975
May	168,678	209,667	156,122	144,987
June	184,205	205,585	155,495	146,381
July	168,917	202,796	148,751	132,496
August	184,767	191,007	150,559	152,027
September	179,664	184,143	165,729	129,167
October	180,350	186,056	182,868	144,133
November	181,822	148,894	165,634	138,176
December	195,571	149,221	178,657	134,299
Total	2,088,615	2,286,865	1,924,750	1,786,344

Synthetic Resin Production

As reported by U. S. Tariff Commission

Year	Tons	Year	Tons
1926	2,972	1941	214,162
1927	6,726	1942	213,365
1928	10,205	1943	326,666
1929	16,518	1944	292,068
1930	15,432	1945	409,010
1931	17,989	1946	497,138
1932	14,519	1947	625,849
1933	22,600	1948	740,438
1934	28,029	1949	745,555
1935	47,566	1950	1,075,259
1936	66,456	1951	1,215,704
1937	81,515	1952	1,166,962
1938	65,179	1953	1,388,213
1939	196,513	1954*	1,357,000
1940	138,407	1955*	1,424,500

*Estimated by Society of Plastic Industries.

POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS

Due to space limitations basic models only are presented for each of the companies represented. Variations, to fit the needs of the individual user, are available from any of the manufacturers listed.

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.) Excluding Battery	Operator—Stn. Stands, Walks	Lift—Fork or Platform	POWER: Motive	POWER: Lifting	MAST: Telescopic	MAST: Tilt Rearward (Deg.)	MAST: Tilt Forward (Deg.)	OVERALL DIMENSIONS: Load Center (In.)	Length (In.): Less Forks	Length (In.): Fork (Max.)	Height (In.): Fork Lift	Height (In.): Mast Collapsed	Height (In.): Mast Extended	Height (In.): Lifting	Height (In.): Overall Including Carriage or Backguard	TURNING RADIUS (In.) With 40" x 48" Pallet: Outside (Tailswing)	Inside	Intersecting Aisle Width	Minimum Aisle for Right Angle Stacking
Atlas 3EA62	6000	6200*	St	Plf	EM		Y			27	104	54*		82*		62*				61†	
Automatic FFE-10	1000	2560	St	Fk	EM	Hyd	Y	10	5	24*	53½	36*	55	68*	107½	107*	129½	85†	21½†	54†	162†
FFE-15	1500	3160	St	Fk	EM	Hyd	Y	10	5	24*	53½	36*	55	68*	107½	107*	129½	85†	21½†	54†	162†
FFE-20	2000	3820	St	Fk	EM	Hyd	Y	10	5	24*	53½	36*	55	68*	107½	107*	129½	85†	21½†	54†	162†
Shipper BF-15	1500	4395*	S	Fk	EM	Hyd	Y	10	5	18*	58½	30*	58	68*	110*	106*	144	86†	21½†	54†	160†
BF-15	1500	4500*	S	Fk	EM	Hyd	Y	10	5	18*	58½	30*	58	83*	147*	132*	166	86†	21½†	54†	160†
Shipper BF-20	2000	6160*	S	Fk	EM	Hyd	Y	10	5	24*	61¾	36*	58	68*	110*	106*	144	87†	21½†	57†	167†
BF-20	2000	5660*	S	Fk	EM	Hyd	Y	10	5	24*	71	36*	68	83*	147*	132*	166	87†	6†	60†	117†
BF-30	3000	6380*	S	Fk	EM	Hyd	Y	10	5	24*	74	36*	60	83*	147*	132*	166	89†	5†	61†	119†
BF-40	4000	7379*	S	Fk	EM	Hyd	Y	10	5	24*	78	36*	68	83*	147*	132*	166	71†	4†	64†	121†
BF-40AE	4000	7250*	St	Fk	EM	Hyd	Y	10	5	18*	82¾	36*	68	83*	147*	132*	166	72†	2½†	66†	122†
CF-10	1000	4450*	S	Fk	EM	Hyd	Y	10	3	24*	64½	36*	68	83*	147*	132*	162	62†	0†	58†	110†
CF-15	1500	4450*	S	Fk	EM	Hyd	Y	10	3	24*	64½	36*	68	83*	147*	132*	162	62†	0†	58†	110†
CF-20	2000	4760*	S	Fk	EM	Hyd	Y	10	3	24*	65¾	36*	68	83*	147*	132*	162	62†	0†	58†	110†
CF-30	3000	5475*	S	Fk	EM	Hyd	Y	10	3	24*	69¼	36*	68	83*	147*	132*	162	65†	0†	62†	114†
CF-40	4000	5980*	S	Fk	EM	Hyd	Y	10	3	18*	69¼	36*	68	83*	147*	132*	162	65†	0†	62†	114†
CLA	800	1540	W	Fk	EM	Hyd	N	10	5	18*	49¾	36*	60	83*	83*	68*	93				
CLB	1000	1570	W	Fk	EM	Hyd	N	10	5	18*	49¾	36*	60	83*	83*	68*	93				
CLTA	850	1790	W	Fk	EM	Hyd	Y	10	5	18*	49¾	36*	60½	83*	150½	136*	160				
CLTB	810	1820	W	Fk	EM	Hyd	Y	10	5	18*	49¾	36*	60½	83*	150½	136*	160				
ESRT-40	4000		St	Fk	EM	Hyd	Y	N	N	18*	74¾	36*	29	83*	146½	130*	156½				78*
ESST-20	2000		St	Fk	EM	Hyd	Y	N	N	24*		42*	67½	83*	146*	132½*					
ESST-30	3000		St	Fk	EM	Hyd	Y	N	N	24*		42*	66½	83*	146½*	130*					
ESST-40	4000		St	Fk	EM	Hyd	Y	N	N	24*		42*	66½	83*	146½*	130*					
FF-10	1000	2474*	S	Fk	EM	Hyd	Y	12½	2½	24*	52¾	36*	68	78*	144*	134*	170	50†	0†	52†	91½†
FF-15	1500	2871*	S	Fk	EM	Hyd	Y	12½	2½	18*	53¼	30*	68	78*	144*	134*	170	50†	0†	52†	91½†
GLF-40	4000	7600	S	Fk	GE	Hyd	Y	10	5	24*	79¾	36*	69	83*	143½	130	149	75†	0†	67†	128†
GLF-50	5000	8100	S	Fk	GE	Hyd	Y	10	5	24*	82¾	36*	69	83*	143½	130	149	78†	0†	69†	129†
GLF-60	6000	8600	S	Fk	GE	Hyd	Y	10	5	24*	85¾	42*	69	83*	143½	130	149	80†	0†	73†	137†
GLF-70	7000		S	Fk	GE	Hyd	Y	10	5	24	97¾	42	24	83*	136½	110	135				
GLF-80	8000		S	Fk	GE	Hyd	Y	10	5	24	99¾	42	24	83*	136½	110	135				
GLF-90	9000		S	Fk	GE	Hyd	Y	10	5	24	101¾	42	24	83*	136½	110	135				
GLF-100	10000	12200	S	Fk	GE	Hyd	Y	10	5	24*	103¾	42*	24	83*	136½	110*	135	93†		62†	181†
HF-200	20000	31870*	St	Fk	EM	Hyd	N	N	N	42*			68*	127*	127*	88*					
HF-250	25000		St	Fk	EM	Hyd	N	N	N	48*			68*	127*	127*	88*					
HF-300	30000	43500*	St	Fk	EM	Hyd	N	N	N	48*			68*	129*	129*	88*					
HF-400	40000	56400*	St	Fk	EM	Hyd	N	N	N	48*			72*	118*	129*	72*					
HF-500	50000	65500*	St	Fk	EM	Hyd	N	N	N	48*			61*	118*	118*	61*					
HF-600	60000	75600*	St	Fk	EM	Hyd	N	N	N	48*			61*	124*	124*	61*					
HF-800	80000	76000*	St	Fk	EM	Hyd	N	N	N	39*			61*	124*	124*	61*					
LF-30	3000	7480*	St	Fk	EM	Hyd	Y	10	5	24*	78½	36*	64	83*	143*	124*	160	77†	5†	67†	128†
LF-40	4000	8600*	St	Fk	EM	Hyd	Y	10	5	24*	82½	36*	64	83*	143*	124*	160	80†	5†	71†	131†
LF-50	5000	9330*	St	Fk	EM	Hyd	Y	10	5	24*	82½	36*	64	83*	143*	124*	160	80†	4†	71†	131†
LF-60	6000	10200*	St	Fk	EM	Hyd	Y	10	5	24*	83¼	42*	64	83*	143*	124*	160	81†	3†	74†	138†
LF-70	7000	11200*	St	Fk	EM	Hyd	Y	10	5	24*		42*	61	83*	137*	115*	151				
LF-80	8000	12075*	St	Fk	EM	Hyd	Y	10	5	24*		42*	61	83*	137*	115*	151				
LF-90	9000	12400*	St	Fk	EM	Hyd	Y	10	5	24*		42*	59	83*	134*	110*	146				
LF-100	10000	13400*	St	Fk	EM	Hyd	Y	10	5	24*		42*	59	83*	134*	110*	146				
LFS-30	3000	7480*	S	Fk	EM	Hyd	Y	10	5	24*		36*	64	83*	143*	124*	160				
LFS-40	4000	8600*	S	Fk	EM	Hyd	Y	10	5	24*	81¾	36*	64	83*	143*	124*	160	80†	8†	71†	131†
LFS-50	5000	9330*	S	Fk	EM	Hyd	Y	10	5	24*	82¾	36*	64	83*	143*	124*	160	81†	4†	72†	132†
LFS-60	6000	10200*	S	Fk	EM	Hyd	Y	10	5	24*	84¼	42*	64	83*	143*	124*	160	81†	3†	74†	138†
LFS-70	7000	11200*	S	Fk	EM	Hyd	Y	10	5	24*	90¼	42*	61	83*	137*	115*	151	85†	2†	79†	145†
LFS-80	8000	12075*	S	Fk	EM	Hyd	Y	10	5	24*	92¼	42*	61	83*	137*	115*	151	85†	2†	79†	145†
LFS-90	9000	12400*	S	Fk	EM	Hyd	Y	10	5	24*	93¼	42*	59	83*	134*	110*	146	86†	2†	80†	148†
LFS-100	10000	13400*	S	Fk	EM	Hyd	Y	10	5	24*	95¼	42*	59	83*	134*	110*	146	86†	2†	80†	148†
RTT	2000	4000*	S	Fk	EM	Hyd	Y	10	5	24*	69¼	36*	68	83*	147*	132*	166	60½†	3†	57†	108†
SCL	2000	2790	W	Fk	EM	Hyd	N	10	3	24*	64½	36*	67	83*	83*	67*	103				
SCLH	2500	3260	W	Fk	EM	Hyd	N	10	3	20*	67½	36*	67	83*	83*	67*	103				
SCLT	2000	3015	W	Fk	EM	Hyd	Y	10	3	24*	64½	36*	67	83*	83*	131*	167				
SCLTH	2500	3490	W	Fk	EM	Hyd	Y	10	3	24*	67¾	36*	67	83*	83*	67*	103				
SO	4000	2200	W	Plf	EM	Hyd	N	N	N	18*		36*	66	83*	83*	66*	102		0		
SOT	4000	2600	W	Fk	EM	Hyd	Y	N	N	18*		36*		83*		129*	164				
SPH-4	4000	1900	W	Plf	EM	Hyd	N	N	N	24*		48*	70	83*	83*	70*	85		0		
SPH-5	5000	2050	W	Plf	EM	Hyd	N	N	N	24*		48*	70	83*	83*	70*	85		0		
SPL-4	4000	1800	W	Plf	EM	Hyd	N	N	N	24*		48*	70	83*	83*	70*	85		0		
SPL-5	5000	1950	W	Plf	EM	Hyd	N	N	N	24*		48*	70	83*	83*	70*	85		0		
SS	4000	2450	W	Fk	EM	Hyd	N	N	N	18*		36*	66	83*	83*	66*	102				
SST	4000	3000	W	Fk	EM	Hyd	Y	N	N	18*		36*		83*		129*	164				
THR-12	12000	17980*	St	Fk	EM	Gh	N	10	3	30*		48*		83*	83*	69	88				
THR-14	14000	20650*	St	Fk	EM	Gh	N	10	3	30*	117½	48*		83*	83*	69	88	110†	10†	97†	184†
THR-16	16000	21450*	St	Fk	EM	Gh	N	10	3	30*	117½	48*		83*	83*	69	88	110†	10†	97†	184†
THR-18	18000	22900*	St	Fk	EM	Gh	N	10	3	30*	117½	48*		83*	83*	69	88	110†	8†	98†	184†
THR-18	18000	24200*	St	Fk	EM	Gh	N	N	N	30*	117	48*		83*	83*	69	88	110†	8†	98†	184†
THTF-M-10	10000	16125*	St	Fk	EM	Gh	Y	10	3	24*	111¾	42*		83*		86*	154	103†	2†	92†	169†
TLN-2	4000	3650	St	Plf	EM	Gh	N	N	N	30*			60*	79½*	79½	60*	79½	97†	46†	61†	
TLN-3	6000	4425	St	Plf	EM	Gh	N	N	N	30*			60*	81*	81	60*	81	99†	46†	62†	
TLO-5	10000	6000	St	Plf	EM	Gh	N	N	N	30*			60*	83*	83	60*	83	110†	62†	69†	

For abbreviations and references see page 308

For Directory of the Industrial Truck Manufacturers listed above, see page 243

POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS—*con.*

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.)—Excluding Battery	Operator—Sits, Stands, Walks	Lift—Fork or Platform	POWER: Motive	POWER: Lifting	MAST: Telescopic	MAST: Tilt Rearward (Deg.)	MAST: Tilt Forward (Deg.)	OVERALL DIMENSIONS: Load Center (in.)	Length (in.): Less Forks	Length (in.): Fork (Max.)	Height (in.): Free Lift	Height (in.): Mast Collapsed	Height (in.): Mast Extended	Height (in.): Lifting	Height (in.): Overall—Including Carriage or Backguard	TURNING RADIUS (In.) With 40" x 48" Pallet: Outside (Tailswing)	TURNING RADIUS (In.) With 40" x 48" Pallet: Inside	TURNING RADIUS (In.) With 40" x 48" Pallet: Intersecting Aisle Width	TURNING RADIUS (In.) With 40" x 48" Pallet: Minimum Aisle for Right Angle Stacking
Baker-Raulang EY-40	4000	9400*	S	Fk	GE	HC	N	10	5	18½	100½	384	N	82½	142½	122½	147½	90	13	82	150
FD-50	5000	7900*	S	Fk	GE	Hyd	Y	10	3	24½	98½	384	12	83½	140½	120½	131	87½	10	78½	147
FD-60	6000	9600*	S	Fk	GE	Hyd	Y	10	3	24½	98	384	12	83½	140½	120½	131	90½	10	77½	150
FG-30	3000	6100*	S	Fk	GE	Hyd	Y	10	3	24½	73¼	384	8	83½	140½	130½	163¼	73¼	8½	68½	127
FG-40	4000	6800*	S	Fk	GE	Hyd	Y	10	3	24½	80	384	8	83½	140½	130½	163¼	75	8½	68½	128
FG-60	6000	9700*	S	Fk	GE	Hyd	Y	10	3	24½	93¼	384	12	83½	140½	120½	132	88½	3	78	142
FL-10	1000	2650	S	Fk	EM	Hyd	Y	10	3	24½	60½	384	60	83½	140½	130½	154	89	4	60	110
FLE-10	1000	2650	S	Fk	EM	Hyd	Y	10	3	24½	60½	384	5	83½	140½	130½	152	89	4	60	110
FL-15	1500	2750	S	Fk	EM	Hyd	Y	10	3	24½	60½	384	60	83½	150½	132½	154	89	4	60	110
FLE-15	1500	2750	S	Fk	EM	Hyd	Y	10	3	24½	60½	384	5	83½	140½	130½	152	89	4	60	110
FP-15	1500	2750	St	Fk	EM	Hyd	Y	10	3	24½	66	384	60	83½	150½	132½	154	90½	4	61	111
FPE-15	1500	2750	St	Fk	EM	Hyd	Y	10	3	24½	66	384	5	83½	140½	130½	152	90½	4	61	111
FS-20	2000	3400	S	Fk	EM	Hyd	Y	10	3	24½	69	384	66	83½	150½	132½	154	85	5	73	120
FSE-20	2000	3400	S	Fk	EM	Hyd	Y	10	3	24½	69	384	5	83½	140½	130½	152	85	5	73	120
FS-25	2500	4050	S	Fk	EM	Hyd	Y	10	3	24½	71	384	5	83½	150½	132½	154	86	5	74	121
FSE-25	2500	4050	S	Fk	EM	Hyd	Y	10	3	24½	71	384	66	83½	140½	130½	152	86	5	74	121
FT-30-S	3000	5000	S	Fk	EM	Hyd	Y	10	3	24½	70½	384	58½	83½	140½	130½	153	88	6	70	126
FTE-30-S	3000	5000	S	Fk	EM	Hyd	Y	10	3	24½	70½	384	5	83½	140½	130½	153	88	6	70	126
FT-30	3000	5100	S	Fk	EM	Hyd	Y	10	3	24½	75	384	58½	83½	140½	130½	153	71½	6	72	128
FTE-30	3000	5100	S	Fk	EM	Hyd	Y	10	3	24½	75	384	5	83½	140½	130½	153	71½	6	72	128
FC-30	3000	4800	St	Fk	EM	Hyd	Y	10	3	24½	77¼	384	58½	83½	140½	102½	153	73	6	72	130
FCE-30	3000	4900	St	Fk	EM	Hyd	Y	10	3	24½	77¼	384	5	83½	140½	130½	153	73	6	72	130
FT-40	4000	5650	S	Fk	EM	Hyd	Y	10	3	24½	79	384	58½	83½	140½	130½	153	74	6	74	131
FTE-40	4000	5650	S	Fk	EM	Hyd	Y	10	3	24½	79	384	5	83½	140½	130½	153	74	6	74	131
FC-40	4000	5400	St	Fk	EM	Hyd	Y	10	3	24½	79¼	384	58½	83½	140½	130½	153	74	6	74	131
FCE-40	4000	5400	St	Fk	EM	Hyd	Y	10	3	24½	79¼	384	5	83½	140½	130½	153	74	6	74	131
FD-40	4000	7500	S	Fk	EG	Hyd	Y	10	3	24½	83	384	58½	83½	140½	130½	153	78	8	76	134
FDE-40	4000	7500	S	Fk	EG	Hyd	Y	10	3	24½	83	384	5	83½	140½	130½	153	78	8	76	134
FT-50	5000	7400	S	Fk	EM	Hyd	Y	10	3	24½	89¼	422	58½	83½	139½	120½	143	80	8	74	138
FTE-50	5000	7400	S	Fk	EM	Hyd	Y	10	3	24½	89¼	422	11	83½	139½	120½	143	80	8	74	138
FC-50	5000	7400	St	Fk	EM	Hyd	Y	10	3	24½	92¼	422	58½	83½	139½	120½	143	81	8	75	141
FCE-50	5000	7500	St	Fk	EM	Hyd	Y	10	3	24½	89¼	422	11	83½	139½	120½	143	81	8	75	141
FT-60	6000	8000	S	Fk	EM	Hyd	Y	10	3	24½	91	422	58½	83½	139½	120½	143	81	8	77	141
FTE-60	6000	8000	S	Fk	EM	Hyd	Y	10	3	24½	91	422	11	83½	139½	120½	143	81	8	77	141
FC-60	6000	8000	St	Fk	EM	Hyd	Y	10	3	24½	91	422	58½	83½	139½	120½	143	81	8	77	141
FCE-60	6000	8000	St	Fk	EM	Hyd	Y	10	3	24½	91	422	11	83½	139½	120½	143	81	8	77	141
JOM-70	7000	9400	St	Fk	EM	Hyd	N	12	5	24½	97	422	47	83½	83½	65½	101	90	20	80	166
JOMH-70	7000	9700	St	Fk	EM	Hyd	Y	12	5	24½	97	422	10½	83½	127½	119½	155	90	20	80	166
JOM-70/60	7000	9000	St	Fk	EM	Hyd	N	12	5	30½	97	422	47	83½	83½	65½	101	93	20	80	166
JOMH-70/60	7000	9300	St	Fk	EM	Hyd	Y	12	5	30½	97	422	10½	83½	127½	119½	155	93	20	80	166
JOM-80	8000	9600	St	Fk	EM	Hyd	N	12	5	24½	100½	422	47	83½	83½	65½	101	105	22	85	166
JOMH-80	8000	9900	St	Fk	EM	Hyd	Y	12	5	24½	100½	422	29½	83½	117½	109½	145	105	22	85	166
JOM-100	10000	10500	St	Fk	EM	Hyd	N	12	5	24½	111½	422	47	83½	83½	65½	96	114	24	92	174
JOMH-100	10000	10800	St	Fk	EM	Hyd	Y	12	5	24½	111½	422	29½	83½	117½	109½	145	114	24	92	174
H5	10000	5450	St	Pl	EM	Hyd	N				81½	84½	60	86½	86½	63½‡	91	116½	86	75	177
HH5	10000	5700	St	Pl†	EM	Hyd	Y				81½	84½	N	86½	132¼	108½	138½	116½	86	75	177
50N	6000	13750*								244		484		97½		120½		295		168	
Barrett NTF-20-60	2000	3535	W	Fk	EM	Hyd	N	N	N	24	59¼	482	60	83¼	83¼	60¼	83¼	78	14	70	110½
NTF-20-45	2000	3285	W	Fk	EM	Hyd	N	N	N	24	59¼	482	45	86¼	86¼	45¼	66¼	78	14	70	110½
TTF-20-S-60	2000	3620	W	Fk	EM	Hyd	N	10	2	24	59¼	482	60	83¼	83¼	60¼	83¼	78	14	70	110½
TTF-2-S-45	2000	3370	W	Fk	EM	Hyd	N	10	2	24	59¼	482	45	86¼	86¼	45¼	66¼	78	14	70	110½
TTF-20-T-60	2000	3620	W	Fk	EM	Hyd	Y	10	2	24	59¼	482	45	86¼	113½	90½	113¼	78	14	70	110½
TTF-20-T-120	2000	3980	W	Fk	EM	Hyd	Y	10	2	24	59¼	482	60	83¼	143½	120½	143¼	78	14	70	110½
Buda FB20-15	2000	3489	S	Fk	GE	Hyd	Y	10	5	15	62¼	384	24½	113½	190½	168½		82¼	10¼	63¼	122¼
FPB20-15	2000	3489	S	Fk	GE	Hyd	Y	10	5	15	68½	384	24½	113½	190½	168½		88¼	10¼	66¼	130½
FB20-24	2000	4104	S	Fk	GE	Hyd	Y	10	5	24	62¼	384	24½	113½	190½	168½		82¼	10¼	63¼	122¼
FPB20-24	2000	4104	S	Fk	GE	Hyd	Y	10	5	24	68½	384	24½	113½	190½	168½		88½	10¼	66¼	130½
FT30-15	3000	4890	S	Fk	GE	Hyd	Y	10	5	15	74½	384	24½	113½	194½	168½		70	7	69½	121
FTD30-15	3000	4870	S	Fk	DE	Hyd	Y	10	5	15	74½	384	24½	113½	194½	168½		70	7	69½	121
FT30-24	3000	5766	S	Fk	GE	Hyd	Y	10	5	24	75½	384	24½	113½	194½	168½		72	7	63½	94†
FTD30-24	3000	5856	S	Fk	DE	Hyd	Y	10	5	24	75½	384	24½	113½	194½	168½		72	7	63½	94†
FT40-18	4000	5946	S	Fk	GE	Hyd	Y	10	5	18	75½	384	24½	113½	194½	168½		72	7	63½	94†
FTD40-18	4000	6036	S	Fk	DE	Hyd	Y	10	5	18	75½	384	24½	113½	194½	168½		72	7	63½	94†
FT40-24	4000	6270	S	Fk	GE	Hyd	Y	10	5	24	81¼	384	24½	113½	194½	168½		77½	8½	65½	89½†
FTD40-24	4000	6360	S	Fk	DE	Hyd	Y	10	5	24	81¼	384	24½	113½	194½	168½		77½	8½	65½	89½†
FTP40-24	4000	7210	S	Fk	GE	Hyd	Y	10	5	24	91	384	24	113½	194½	168½		86	15½	72	103½
FTPD40-24	4000	7300	S	Fk	DE	Hyd	Y	10	5	24	91	384	24	113½	194½	168½		86	15½	72	103½
FTB50-24	5000	7165	S	Fk	GE	Hyd	Y	10	5	24	84	384	24	113½	194½	168½	194½	79½	8	67	92
FTBD50-24	5000	7275	S	Fk	DE	Hyd	Y	10	5	24	84	384	24	113½	194½	168½	194½	79½	8	67	92
FT50-24	5000	7704	S	Fk	GE	Hyd	Y	10	5	24	88	384	16½‡	113½	200½	168½		82½	7½	71	98½†
FTD50-24	5000	7824	S	Fk	DE	Hyd	Y	10	5	24	88	384	16½‡	113½	200½	168½		82½	7½	71	98½†
FT60-24	6000	8847	S	Fk	GE	Hyd	Y	10	5	24	93	424	16½‡	113½	200½	168½		88	9½	74½	102†
FTD60-24	6000	8967	S	Fk	DE	Hyd	Y	10	5	24	93	424	16½‡	113½	200½	168½		88	9½	74½	102†
FTP60-24	6000	9430	S	Fk	GE	Hyd	Y	10	5	24	104½	424	16½‡	113½	200½	168½		111	20	91	131†
FTPD60-24	6000	9550	S	Fk	DE	Hyd	Y	10	5	24	104½	424	16½‡	113½	200½	168½		111	20	91	131†
FT75-24	7500	9531	S	Fk	GE	Hyd	Y	10	5	24	100½	424	8½‡	113½	209½	168½		96	13½	78¼	111†
FTD75-24	7500	9651	S	Fk	DE	Hyd	Y	10	5	24	100½	424	8½‡	113½	209½	168½		96	13½	78¼	111†
Champ 300	4000	8180	S	Fk	GE	HC	Y	12	6	36½	106	482	N	140½	237½	192½	236	150	10	102	192
600	6000	9980	S	Fk	GE	HC	Y	12	6	36½	127	722	N	162½	282½	240½	280	192	11	216	216
700	8000	10200	S	Fk	GE	HC	Y	12	6	36½	127	722	N	162½	282½	240½	280	192	11	216	216

For abbreviations and references see page 308

For Directory of the Industrial Truck Manufacturers listed above, see page 263

POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS—*con.*

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.) Excluding Battery	Operator—Sits, Stands, Walks	Lift—Fork or Platform	POWER: Native	POWER: Lifting	MAST: Telescopic	MAST: Tilt Rearward (Deg.)	MAST: Tilt Forward (Deg.)	OVERALL DIMENSIONS: Load Center (In.)	Length (In.): Less Forks	Length (In.): Fork (Max.)	Height (In.): Free Lift	Height (In.): Mast Collapsed	Height (In.): Mast Extended	Height (In.): Lifting	Height (In.): Overall—Including Carriage or Backguard	TURNING RADIUS (In.) With 40" x 48" Pallet: Outside (Tailswing)	Inside	Intersecting Aisle Width	Minimum Aisle for Right Angle Stacking
Clark																					
ETR-1024	1000	1615	S	Fk	EM	Hyd	Y	10	3	30	53½	30*	6¼	94	149	130	.....	58	.....	81½	65½
ECE-2024	2000	3650	S	Fk	EM	Hyd	Y	10	3	40	63½	30*	6½	87	150½	132	.....	62	.....	87	73½
ECL-3024	3000	5040	S	Fk	EM	Hyd	Y	10	3	40	74½	36*	6½	102	177½	156	.....	69	.....	63½	83½
ECL-4024	4000	5860	S	Fk	EM	Hyd	Y	10	3	40	77¼	36*	6½	102	177½	156	.....	70	.....	98¼	92½
ECL-5024	5000	6833	S	Fk	EM	Hyd	Y	10	3	40	79¼	36*	6½	102	177½	156	.....	70	.....	98¼	92½
EUT-6024	7000	8073	S	Fk	EM	Hyd	Y	10	3	40	87	42*	25	117	203	180	.....	84	.....	75½	99½
EUT-7024	7000	9653	S	Fk	EM	Hyd	Y	10	3	45	88	42*	25	117	203	180	.....	86	.....	78	101½
ETR-1024	1000	2605	S	Fk	GE	Hyd	Y	10	3	36	56½	30*	605/6	78	147¼	130	.....	57	.....	49	67½
CE-2024	2000	4380	S	Fk	GE	Hyd	Y	10	3	40	67½	30*	64	83	148¼	130	.....	65	.....	56	77¼
CL-3024	3000	6750	S	Fk	GE	Hyd	Y	10	3	40	73½	36*	62	83	193	172	.....	71½	.....	65	85½
CL-4024	4000	7240	S	Fk	GE	Hyd	Y	10	3	40	80	36*	62	83	193	172	.....	78	.....	68	92½
CL-5024	5000	8020	S	Fk	GE	Hyd	Y	10	3	40	83½	36*	62	83	193	172	.....	81½	.....	70	95½
UT-6024	7000	9750	S	Fk	GE	Hyd	Y	10	3	45	88	42*	25	117	203	180	.....	85	.....	74½	100½
UT-7024	8000	10450	S	Fk	GE	Hyd	Y	10	3	45	88¼	42*	25	117	203	180	.....	86	.....	75½	101½
UT-100	10000	12860	S	Fk	GE	Hyd	Y	10	3	45	108	42*	7	116	194	164	.....	105	.....	87½	122
Y-20	2000	4000	S	Fk	GE	Hyd	Y	10	3	40	725/6	36*	6⅞	90	153	132	.....	71½	.....	60	85½
Y-40	4400	6670	S	Fk	GE	Hyd	Y	10	3	40	94⅛	36*	6½	98	166	144	.....	85½	.....	73	103½
Y-60	6000	8670	S	Fk	GE	Hyd	Y	10	3	40	111	42*	6¾	115	194	168	.....	114	.....	94	134½
Y-100	10000	14145	S	Fk	GE	Hyd	Y	12	4	49	133⅝	48*	.....	150	244	210	.....	135½	.....	116	158½
Y-180	18000	16330	S	Fk	GE	Hyd	Y	12	4	54	170½	48*	.....	152	255	210	.....	165	.....	136	192½
Crescent																					
JCL-1-15	1000	2120	S	Fk	EM	Hyd	Y	10	3	15	90⅛	.....	29	83	137	120	137	61	.....	54	97½
JCL-1		2445	S	Fk	EM	Hyd	Y	10	3	24	64½	.....	29	83	137	120	137	61	.....	54	98¼
JCL-1.5		2975	S	Fk	EM	Hyd	Y	10	3	24	65¼	.....	29	83	137	120	137	62	.....	54	106¼
JCH-2	2000	.....	S	Fk	EM	Hyd	Y	10	5	24	63	.....	66	83	138	120	138	63	.....	57	120
JCH-3	3000	.....	S	Fk	EM	Hyd	Y	10	5	24	65½	.....	64½	83	153	130	153	68	.....	64	126
JEH-1	1000	.....	St	Fk	EM	Hyd	Y	5	3	24	53	.....	66	83	137	120	137	49	.....	49	102
JEH-2-18	2000	.....	St	Fk	EM	Hyd	Y	5	3	18	55½	.....	66	83	137	120	137	50	.....	52	104
JEH-2	2000	.....	St	Fk	EM	Hyd	Y	5	3	24	57½	.....	66	83	137	120	137	52	.....	53	106
JEH-3	3000	.....	St	Fk	EM	Hyd	Y	5	3	24	64½	.....	64½	83	137	120	137	58	.....	58	114
MEH-4	4000	.....	St	Fk	EM	Hyd	Y	5	3	24	68¼	.....	63½	83	152	130	152	60	.....	62	116
MCH-4	4000	.....	S	Fk	EM	Hyd	Y	10	5	24	71½	.....	63½	83	153	130	153	70	.....	68	130
MCH-5	5000	.....	S	Fk	EM	Hyd	Y	10	5	24	76¾	.....	64	83	152	130	152½	70	.....	68	134
MCH-6	6000	.....	S	Fk	EM	Hyd	Y	10	5	24	82¾	.....	64	83	146½	124	146½	83	.....	70	144
MCL-7	7000	.....	S	Fk	EM	Hyd	Y	10	5	24	94½	.....	7¼	83	142½	120	142½	89	.....	76	.....
MCL-8	8000	.....	S	Fk	EM	Hyd	Y	10	5	24	94½	.....	7¼	83	142½	120	142½	89	.....	76	.....
Elwell-Parker																					
E-12-20	20000	16000	St	Pif	EGD	Hyd	N	.....	.....	.....	153	626	48	834	.....	484	.....	149	79	86	208
E-12-30	30000	22000	St	Pif	EGD	Hyd	N	.....	.....	.....	180	944	60	1084	.....	604	.....	169	87	107	247
E-12-40	40000	28000	St	Pif	EGD	Hyd	N	.....	.....	.....	184	944	60	1084	.....	604	.....	.....	103	124	269
E-12-60	60000	28600	St	Pif	EGD	Hyd	N	.....	.....	.....	198	944	60	1164	.....	604	.....	193	108	116	274
E-12-80	80000	29600	St	Pif	EGD	Hyd	N	.....	.....	.....	208	1026	72	1346	.....	726	.....	220	113	134	294
F-26T2	2000	5000**	S	Fk	EM	Hyd	Y	10	5	24	67½	48*	17	836	1402	1302	149	67	8	88	1111½
F-26T2	2000	4600**	St	Fk	EM	Hyd	Y	10	5	24	67½	48*	80	986	1162	1002	119	67	8	88	1111½
F-36T	2000	4985**	St	Fk	EM	Hyd	Y	10	5	28	69	36*	80	986	1182	1002	119	57	9	84	99
F-30T3	3000	7300**	S	Fk	EM	Hyd	Y	12	5	24	73½	48*	17	836	1472	1302	149	84	9	88	129
F-30T3	3000	7000**	St	Fk	EM	Hyd	Y	12	5	24	73½	48*	80	986	1182	1002	119	84	9	88	129
F-30T4	4000	7600**	S	Fk	EM	Hyd	Y	12	5	24	78½	48*	17	836	1472	1302	149	83	10	70	1341½
F-30T4	4000	7400**	St	Fk	EM	Hyd	Y	12	5	24	78½	48*	80	986	1172	1002	119	83	10	70	1341½
F-31T6	6000	9900**	S	Fk	EM	Hyd	Y	12	5	24	82½	48*	17	986	1482	1282	147	87	11	72	1391¼
F-31T6	6000	9650**	St	Fk	EM	Hyd	Y	12	5	24	82½	48*	80	986	1172	982	119	87	11	72	1391¼
F-31T7	7000	10565**	S	Fk	EM	Hyd	Y	12	5	24	88¼	48*	17	834	1482	982	147	91	13	76	1434¼
F-30T8	8000	10000**	S	Fk	EM	Hyd	Y	12	5	24	94	48*	17	834	1402	1164	182	95	9	80	154
F-30T10	10000	13300**	S	Fk	EM	Hyd	Y	12	5	24	98	48*	17	834	1372	1104	146	99	10	83	158
F-25T	10000	15000**	St	Fk	EM	Ch	Y	12	3	24	102	48*	67	962	1512	1246	182	129	39	92	162
F-6	12000	18500**	St	FkR	EM	Ch	Y	10	3	30	111	60*	58	.....	962	732	95	113	19	92	186
F-6	15000	22600**	St	FkR	EM	Ch	Y	10	3	30	117	72*	67	962	962	752	98	118	18	106	196
F-6	16000	24900**	St	FkR	EM	Ch	Y	10	3	30	146	78*	53	962	984	712	98	126	21	103	207
E-11	4000	3300	St	Pif	EM	Ch	N	N	N	.....	97½	60*	64	834	.....	644	.....	88	46	52	131
E-11-T	4000	3725	St	Pif	EM	Ch	Y	N	N	.....	97½	60*	65½	834	1415½	1242	.....	88	46	52	131
E-2	4000	3700	St	Pif	EM	Ch	N	N	N	.....	118½	72*	62½	834	.....	622	.....	94	38	63	147
E-2-T	4000	4400	St	Pif	EM	Ch	Y	N	N	.....	118½	72*	63½	834	1335½	1142	.....	94	38	63	147
ELN-6	6000	4750	St	Pif	EM	Ch	Y	N	N	.....	125½	84*	62	834	.....	622	.....	96	42	68	159
ELN-6-T	6000	5500	St	Pif	EM	Ch	Y	N	N	.....	125½	84*	625/6	834	1335½	1134	.....	96	42	68	159
ELN-10	10000	6000	St	Pif	EM	Ch	Y	N	N	.....	136	108*	70	954	.....	694	.....	126	66	73	183
ELN-10-T	10000	8200	St	Pif	EM	Ch	Y	N	N	.....	136	108*	70	954	1425½	1184	.....	126	66	73	183
ELN-16	16000	8500	St	Pif	EM	Ch	N	N	N	.....	139½	96*	57	954	982	874	.....	128	68	78	186
ELN-20	20000	9800	St	Pif	EM	Ch	N	N	N	.....	141½	96*	57	954	982	874	.....	156	92	88	206
ELN-30	30000	13500	St	Pif	EM	Ch	N	N	N	.....	167	72*	57	1074	1074	876	107	163	93	96	225
ELS-50	50000	20000	St	Pif	EM	Ch	N	N	N	.....	158½	72*	51	1024	1024	814	102	166	91	102	229
R-20	20000	27000*	St	R	EGD	Hyd	N	N	N	42	180	84*	95	136*	.....	884	136	146	28	112	230
R-30	30000	34000*	St	R	EGD	Hyd	N	N	N	42	181	84*	96	141*	.....	884	141	162	33	126	254
R-40	40000	52600*	St	R	EGD	Hyd	N	N	N	36	171½	78*	100	144*	.....	1004	144	191	34	161	279
R-50	50000	60790*	St	R	EGD	Hyd	N	N	N	42	172	84*	94	144*	.....	944	144	191	29	166	279
R-60	60000	68960*	St	R	EGD	Hyd	N	N	N	45	172	90*	88	144*	.....	884	144	191	29	169	279
F-48-T-3	3000	5330*	S	Fk	EGD	Hyd	Y	10	6	24	72½	48*	50	82*	.....	1304	149	72	9½	65	127
Erickson																					
F2R	Var	4250	S	Fk	GE	Hyd	Y	10	4	24	72	48*	50	104	192	168	.....	88	6	78	126
F4R	Var	6200	S	Fk	GE	Hyd	Y	10	4	24	110	48*	4	116	208	180	.....	107	18	94	174
F6R	Var	7600	S	Fk	GE	Hyd	Y	10	4	24	110	54*	4	118	210	180	.....	123	38	98	184
F8R	Var	11500	S	Fk	GE	Hyd	Y	12	7	36	147	66*	4	144	280	216	.....	156	48	132	216
Gerlinger																					
L-12	12685	17150	S	Fk	GD	Hyd	Y	8	7	48	191	48*	.....	173½	312	268	.....	180	24	140	.....
L-16	15000	18000	S	Fk	GD	Hyd	Y	8	7	48	191	48*	.....	173½	312	268	.....	180	24	140	.....
L-16	16000	19300	S	Fk	GD	Hyd	Y	8	7	48	191	48*	.....	174	312	268	.....	180	24	140	.....
L-18	19050	20500	S	Fk	GD	Hyd	Y	8	7	48	191	48*	.....	174	312	268	.....	180	24	140	.....
L-20	20000	21500	S	Fk	GD	Hyd	Y	8	7	48	191	48*	.....	174	312	268	.....	180	24	140	.....
L-22	22000	22500	S	Fk	GD	Hyd	Y	8	7	48	191	48*	.....	174	312	268	.....	180	24	140	.....
S-8	8000	15625	S	Fk	GD	Hyd	Y	9	6	36	180	42	.....	151	290	216	.....	140	10	129	.....
S-10	10000	16000	S	Fk	GD	Hyd	Y	9	6	36	180	42	.....	151	290	216	.....	140	10	129	.....

For abbreviations and references see page 308

For Directory of the Industrial Truck Manufacturers listed above, see page 263

POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS—*con.*

MAKE AND MODEL		Maximum Load Capacity (lb.)	Service Weight (lb.)—Excluding Battery	Operator—Stn. Stands, Walks	Lift—Fork or Platform	POWER		MAST			OVERALL DIMENSIONS								TURNING RADIUS (In.) With 40" x 48" Pallet			
								Telescopic	Tilt		Load Center (In.)	Length (In.)	Height (In.)						Outside (Tailswing)	Inside	Intersecting Aisle Width	Minimum Aisle for Right Angle Stacking
									Rearward (Deg.)	Forward (Deg.)		Less Forks	Fork (Max.)	Free Lift	Mast Collapsed	Mast Extended	Lifting	Overall—Including Carriage or Backguard				
Gerlinger—Cont'd.	S-12	12000	17650	S	Fk	GD	Hyd	Y	9	6	36‡	151	48		162‡	290‡	216‡		141	10	120	
	S-15	15000	19500	S	Fk	GD	Hyd	Y	9	6	36‡	154	48		162‡	290‡	216‡		144	10	124	
	S-16	16000	21000	S	Fk	GD	Hyd	Y	9	6	36‡	158	48		162‡	290‡	216‡		146	10	124	
HH	SPHL	4000	6000	S	Fk	GE	Hyd	Y	15	7	24‡		48‡		106	144						
Hyster	ON-20	1000	3020	S	Fk	GE	Hyd	Y	11	3	24	71	48‡	2	88‡	150‡	126‡	150	67	11	98	132
	ON-20	2000	3620	S	Fk	GE	Hyd	Y	11	3	18	71	48‡	2	88‡	150‡	126‡	150	67	11	98	132
	ON-20	2000	3980	S	Fk	GE	Hyd	Y	11	3	24	73¼	48‡	2	88‡	150‡	126‡	150	69¼	11	62	135
	UC-30	3000	5705	S	Fk	GE	Hyd	Y	10	5	24	74½	60‡	30	100‡	166‡	144‡	166¾	75	7½	85	135
	YC-40	4000	6305	S	Fk	GE	Hyd	Y	10	5	24	79¼	60‡	30	100‡	166‡	144‡	166¾	75	7½	86	135
	YT-40	4000	5900	S	Fk	GE	Hyd	Y	10	4	15	86	54‡	10	101‡	166‡	144‡	166	79	10	72	140
	XA-60	6000	10530	S	Fk	GE	Hyd	Y	11	5	24	106½	84‡	5	113½	193‡	168‡	193¾	114	36½	86	163
	ZA-80	8000	11660	S	Fk	GE	Hyd	Y	12	4	24	117½	84‡	5	115‡	195‡	168‡	196	129	43½	99	196
	RT-100	10000	13600	S	Fk	GE	Hyd	Y	10	6	24	140	108‡	N	100‡	334‡	288‡	344½	160	71	131	280
	RC-150	15000	19250	S	Fk	GE	Hyd	Y	10	6	24	153¾	108‡	N	102‡	336‡	288‡	336	177	48	131	290
	RC-160	16000	19730	S	Fk	GE	Hyd	Y	10	6	24	157¼	108‡	N	102‡	336‡	288‡	336	177	48	131	290
	SC-180	18000	20980	S	Fk	GE	Hyd	Y	10	6	24	150	108‡	N	102‡	336‡	288‡	336	176	48	132	292
Kwik Mix	S-10	1000	1550	St	Fk	GE	Hyd	Y	0	10	21‡	80	30‡	12	86▲	844	72‡	84	61	6	84	
	R-15	1500	2200	S	Fk	GE	Hyd	Y	0	2	21‡	81	30‡	N	86▲	1046	84‡	104	75	6	84	
Lewis-Shepard	EFFTT-1	1000	3320	St	Fk	EM	Hyd	Y	10	3	24‡	65½	48‡	65	91‡	165‡	142‡	165	59	68½	65	111¼
	59	1500	3365	St	Fk	EM	Hyd	Y	10	3	24‡	65½	48‡	65	91‡	165‡	142‡	165	59	68½	65	111¼
	EFFTT-2	2000	3970	St	Fk	EM	Hyd	Y	10	3	24‡	67¼	48‡	65	89‡	161‡	138‡	161	61	68½	65	113¼
	61	3000	5520	St	Fk	EM	Hyd	Y	10	3	24‡	69¼	48‡	65	91‡	165‡	142‡	165	61	67¼	68	114¼
	EFFTT-3	3000	4930	St	Fk	EM	Hyd	Y	10	3	24‡	75¼	48‡	65	91‡	165‡	142‡	165	66½	67¼	70	120
	EFFTT-4	4000	5830	St	Fk	EM	Hyd	Y	10	3	24‡	79¼	48‡	61½	91‡	157‡	134‡	157	66½	67¼	70	120
	JFTT-1	1000	2880	S	Fk	EM	Hyd	Y	10	2	24‡	58½	48‡	11	83‡	147‡	130‡	178	49½	62¼	66	96½
	JFTT-1.5	1500	3265	S	Fk	EM	Hyd	Y	10	2	24‡	58½	48‡	14	83‡	147‡	130‡	178	49½	62¼	66	96½
	JFTT-2	2000	3350	S	Fk	EM	Hyd	Y	10	2	24‡	61½	48‡	14	83‡	147‡	130‡	178	50½	62¼	67	101½
	E1SCTL	1000	3060	W	Fk	EM	Hyd	Y	5	N	24‡	69½	48‡	11	83‡	148‡	130‡	178	49½	62¼	61	96¼
	E1.5SCTL	1500	3160	W	Fk	EM	Hyd	Y	10	2	24‡	69½	48‡	14	83‡	147‡	130‡	178	50½	62¼	69½	96¼
	E2SCTL	2000	3180	W	Fk	EM	Hyd	Y	10	2	24‡	62¼	48‡	14	83‡	147‡	130‡	178	66½	62¼	73½	102¼
	E2.5SCHTL	2500	3210	W	Fk	EM	Hyd	Y	10	2	24‡	69½	48‡	18	83‡	144‡	124‡	172	62½	62¼	76	100¼
	E3SCRTL	3000	3410	W	Fk	EM	Hyd	Y	10	2	24‡	81¼	48‡	18	83‡	145‡	125‡	173	74½	62¼	85	121¼
	M2SST	2000	2900	St	Fk	EM	Hyd	Y			24‡	29	48‡	11½	83‡	145‡	127‡	145	60	50	61	89
	M3SST	3000	2900	St	Fk	EM	Hyd	Y			24‡	29	48‡	11½	83‡	145‡	127‡	145	60	50	61	89
	M3SOT	3000	2600	St	Fk	EM	Hyd	Y			32‡	26¼	48‡	25	83‡	144‡	125‡	144	60	50	61	89
	M3SPT	3000	2575	St	Ptf	EM	Hyd	Y			36‡	26¼	54‡	30	83‡	144‡	129‡	144	60	50	61	89
	E4SST	4000	2750	W	Fk	EM	Hyd	Y			32‡	29½	48‡	25	83‡	144‡	124‡	144	65	49		88
	E4SOT	4000	2350	W	Fk	EM	Hyd	Y			32‡	26½	48‡	25	71‡	120‡	101‡	120	63	49		83
	E4SPT	4000	2125	W	Ptf	EM	Hyd	Y			36‡	26½	54‡	30	83‡	144‡	129‡	144	63	49		83
Lift Trucks	KHL	2000	1485	W	Fk	EM	HC	Y				36½	42‡		83‡	141½‡	129‡	141¾			84½‡	93¾‡
	KHCM-18	1000		W	Fk	EM	HC	Y														
	HHL	1000		W	Fk	EM	Hyd	Y				21½	42‡		83‡		120‡				82‡	89¾‡
	HHL	2000		W	Fk	EM	Hyd	Y				21½	42‡		83‡		120‡				82‡	89¾‡
	K3HL	3000	2700	W	Fk	EM	Hyd	Y	N	N	24‡		42‡	4	83‡	141¾‡	120‡	141¾			84	92
	K2HCM	2000	3300	W	Fk	EM	Hyd	Y	N	N	48‡	56	42‡	4	84½‡	142‡	120‡	142			88	96
	K2HW	2000	2650	W	Ptf	EM	Hyd	Y	N	N					83▲	83▲	66‡	83			86	87
	K4HW	4000	2900	W	Ptf	EM	Hyd	Y	N	N					83▲	83▲	66‡	83			86	87
MacDonald	D	6000	12500	S	Fk	GE	Hyd	Y	12	4	43½	143½*		93‡	124‡	228‡	200‡	231‡	96‡	9	91‡	
Market Forge	FT-55	2400	2100	S	Fk	EEG	Hyd	Opt	10	5	24‡	55½	72‡	63‡	83‡	146‡	126‡	162‡	60	4	60	66
	FT-56	2400	2100	St	Fk	EEG	Hyd	Opt	10	5	24‡	55½	72‡	63‡	83‡	146‡	126‡	162‡	60	4	60	66
	FT-63	2400	2100	S	Fk	EEG	Hyd	Opt	10	5	36‡	63½	72‡	63‡	83‡	146‡	126‡	162‡	60	4	60	66
	FT-63	2400	2100	St	Fk	EEG	Hyd	Opt	10	5	36‡	63½	72‡	63‡	83‡	146‡	126‡	162‡	60	4	60	66
	TL-26	4000	2900	Sa	Ptf	EM	Hyd	Opt	N	N	24‡	43½	48‡	63‡	83‡	146‡	126‡	146				
Mercury	A-2304	2001	3800	S	Fk	EM	Hyd	Y	10	3	24‡	68¼	60‡		Sp	Sp	Sp	Sp	60		67½	
	A-3404	2500	4100	S	Fk	EM	Hyd	Y	10	3	24‡	62½	60‡		Sp	Sp	Sp	Sp	66½		69	
	A-3444	3000	4350	S	Fk	EM	Hyd	Y	10	3	24‡	66¾	60‡		Sp	Sp	Sp	Sp	70		72	
	A-4304	4000	6100	S	Fk	EM	Hyd	Y	10	4	30‡	69¾	60‡		Sp	Sp	Sp	Sp	70		70	
	A-1484	6000	7000	St	Fk	EM	Hyd	Y	15	5	30‡	83¾	60‡		Sp	Sp	Sp	Sp	85		72	
	A-1844	8000	8700	St	Fk	EM	Hyd	Y	15	5	30‡	89¾	60‡		Sp	Sp	Sp	Sp	91		75	
	A-1005	3000	2700		Ptf	EM	Hyd										110‡					
	A-1006	4000	2800		Ptf	EM	Hyd										110‡					
	A-1008	3000	2400		Ptf	EM	Hyd										67‡					
	A-1006	4000	2900		Ptf	EM	Hyd										67‡					
	A-1018	4000	3500		Ptf	EM	Hyd										62¼‡					
	A-1019	4000	4300		Ptf	EM	Hyd										113‡					
	A-1001	6000	3700		Ptf	EM	Hyd										62¼‡					
	A-1003	6000	4500		Ptf	EM	Hyd										113‡					
	A-1013	10000	5200		Ptf	EM	Hyd										67‡					
	A-6304	6000	7300	S	Fk	EM	Hyd	Y	10	4	24		60‡		Sp	Sp	Sp	Sp	84		73	
Raymond	E4ST	4000	3350	St	Fk	EM	Hyd	Y	N	N	24	33½	44‡	54½	83	128	126	132½	N	N	64	82
	E2RT	2000	2750	St	Fk	EM	Hyd	Y	N	N	24	34½	44‡	41	83	116	116	102½	N	N	60	79
	E3RT	3000	4200	St	Fk	EM	Hyd	Y	N	N	24	36½	44‡	31½	83	116	116	170½	N	N	61	79
	E4PT	4000	3400	St	Ptf	EM	Hyd	N	N	N	30	31½	48‡	54½	83	128	110	147½	N	N	58	74
	E2P	2000	1800	St	Ptf	EM	Hyd	N	N	N	24	29½	48‡	65	83	71	86	86	N	N	58	72
	E2PT	2000	1850	St	Ptf	EM	Hyd	Y	N	N	24	29½	48‡	52	83	127	121	149½	N	N	58	72
	E4P	4000	1900	St	Ptf	EM	Hyd	N	N	N	30	30½	48‡	62½	83	84	58	84½	N	N	58	74
	E2F	2000	1850	St	Fk	EM	Hyd	N	N	N	24	31½	42‡	62½	83	67½	64	88¼	N	N	60	71
	E2FT	2000	1900	St	Fk	EM	Hyd	Y	N	N	24	31½	42‡	44½	83¾	132	128½	153¼	N	N	60	71
	E2S	2000	1800	St	Fk	EM	Hyd	N	N	N	24	31½	44‡	53	83	66	62	89¼	N	N	61	70
	E2ST	2000	2250	St	Fk	EM	Hyd	Y	N	N	24	31½	44‡	45½	83	130	127	167¼	N	N	61	70
	E3ST	3000	2300	St	Fk	EM	Hyd	Y	N	N	24	31½	44‡	51	83	116	115	148	N	N	61	70

For abbreviations and references see page 306

For Directory of the Industrial Truck Manufacturers listed above, see page 263

POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS—*con.*

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.) Excluding Battery	Operator—Sits, Stands, Walks	Lift—Fork or Platform	POWER		MAST			OVERALL DIMENSIONS								TURNING RADIUS (In.) With 40" x 40" Pallet			
								Tilt			Length (In.)		Height (In.)								
														Mast							
					Motive	Lifting	Telescopic	Rearward (Deg.)	Forward (Deg.)	Load Center (In.)	Less Forks	Fork (Max.)	Free Lift	Collapsed	Extended	Lifting	Overall Including Carriage or Backguard	Outside (Tailswing)	Inside	Intersecting Aisle Width	Minimum Aisle for Right Angle Stacking
Revolvator																					
..... 52122	2500	1650	W	Fk	EM	HC	Y			48‡	38	42‡	13	104‡	173‡	156‡	.....	.....	.....	Var	Var
..... 52123	3000	Var	W	Fk	EM	HC	Y	10	2	48‡	Var	42‡	13	104‡	173‡	156‡	.....	.....	.....	Var	Var
..... 52112	4000	1700	W	Plf	EM	HC	N			30‡	29½	66‡	N	101‡	N	65‡	.....	.....	.....	Var	Var
Ross																					
..... SS	3000	6000	S	Fk	GE	Hyd	Y	12	6	30‡	91¼	30*		100½‡	172½‡	144‡	.....	86¼	.....	.....	.....
..... SS-FL	4000	6000	S	Fk	GE	Hyd	Y	12	6	30‡	91¼	30*	72‡	100½‡	172½‡	144‡	.....	86¼	.....	.....	.....
..... 6S	6000	9000	S	Fk	GE	Hyd	Y	12	6	29‡	115	42*	72‡	115‡	199‡	168‡	.....	100	12	92	.....
..... 10-M	12000	14600	S	Fk	GE	Hyd	Y	12	4	48‡	146	42*	6	170‡	276‡	240‡	.....	132½	.....	123	.....
..... 10-L	8000	12800	S	Fk	GE	Hyd	Y	12	4	48‡	146	42*	6	170‡	276‡	240‡	.....	132½	.....	123	.....
..... 10-M	10000	13700	S	Fk	GE	Hyd	Y	12	4	48‡	146	42*	6	170‡	276‡	240‡	.....	132½	.....	123	.....
..... 15-LH	18000	16500	S	Fk	GE	Hyd	Y	12	4	48‡	165½	42*	6	170‡	290‡	240‡	.....	175	.....	150	.....
..... 15-LL	15000	17300	S	Fk	GE	Hyd	Y	12	4	48‡	165½	42*	6	170‡	290‡	240‡	.....	175	.....	150	.....
..... 15-SH	15000	16000	S	Fk	GE	Hyd	Y	12	4	48‡	165½	42*	6	170‡	290‡	240‡	.....	152	.....	141	.....
..... 15-SL	13000	16800	S	Fk	GE	Hyd	Y	12	4	48‡	165½	42*	6	170‡	290‡	240‡	.....	152	.....	141	.....
..... 2024	20000	20700	S	Fk	GE	Hyd	Y	12	4	48‡	185½	42*	.....	170‡	290‡	240‡	.....	180	.....	.....	.....
..... 2636	26000	31000	S	Fk	GE	Hyd	Y	12	4	84‡	224½	72*	.....	266‡	386‡	210‡	.....	210	.....	.....	.....
Silent Hoist																					
..... FK5	.....	14500	S	Fk	GE	Hyd	Y	12	4	24	150	72‡	.....	162‡	270‡	216‡	.....	153	135	.....	.....
..... FK7½	.....	19000	S	Fk	GE	Hyd	Y	12	4	24	180	96‡	.....	162‡	270‡	216‡	.....	156	135	.....	.....
..... FK10	.....	20000	S	Fk	GE	Hyd	Y	12	4	24	190	120‡	.....	174‡	282‡	216‡	.....	188	166	.....	.....
..... FK15	.....	30000	S	Fk	GE	Hyd	Y	12	4	30	226	120‡	.....	153‡	243‡	180‡	.....	226	.....	.....	.....
Towmotor																					
..... LT-35	1500	30856	Se	Fk	GE	Hyd	Y	10	3-5	15*	80½	30*	25½‡	83‡	137‡	121½‡	140½‡	58	5	53	109½
..... LT-35	2000	34056	Se	Fk	GE	Hyd	Y	10	3-5	15*	80½	30*	25½‡	83‡	137‡	121½‡	140½‡	58	5	55	109½
..... LT-35	2000	41306	Se	Fk	GE	Hyd	Y	10	3-5	24*	81½	30*	25½‡	83‡	137‡	121½‡	140½‡	60½	5	56	112
..... 390	3000	46356	S	Fk	GL	Hyd	Y	10	3-5	15*	71½	30*	25½‡	101‡	161‡	145½‡	164‡	69	5	61	126½
..... 420	4000	55006	S	Fk	GL	Hyd	Y	10	3-5	15*	74½	38*	25½‡	101‡	161‡	145½‡	164‡	71	5½	63½	123½
..... 460	4000	62106	S	Fk	GDL	Hyd	Y	10	3-5	24*	78½	38*	25½‡	101‡	161‡	145½‡	164‡	75	6	65	127½
..... 480-P	2000	45106	S	Fk	GL	Hyd	Y	12	3	24*	74	30*	21½‡	83‡	139‡	121‡	140‡	72	12½	60½	127½
..... 500	5000	72356	S	Fk	GDL	Hyd	Y	10	3-5	24*	82½	38*	25¾‡	101‡	161‡	145‡	164‡	81	10¼	69	141¾
..... 500-P	4000	68856	S	Fk	GDL	Hyd	Y	10	3-5	24*	88½	38*	25¾‡	85‡	139‡	121¾‡	140¼‡	86½	15¼	74½	153
..... LT-60	4000	74056	S	Fk	GD	Hyd	Y	10	5	24*	106½	42*	13‡	87‡	140‡	109‡	147‡	125	50	87	185¼
..... LT-60	5000	80256	S	Fk	GD	Hyd	Y	10	5	24*	106½	42*	13‡	87‡	140‡	109‡	147‡	125	50	87	185¼
..... LT-60	6000	89656	S	Fk	GD	Hyd	Y	10	5	24*	106½	42*	13‡	87‡	140‡	109‡	147‡	136	62	88½	196¾
..... LT-50	5000	75306	S	Fk	GE	Hyd	Y	10	3-5	20*	88	38*	20½‡	104‡	171¼‡	145‡	178‡	90	21	71½	145
..... LT-50	6000	84156	S	Fk	GE	Hyd	Y	10	3-5	24*	94	42*	20½‡	104‡	171¼‡	145‡	178‡	96	25	75½	151
..... LT-62	7000	94206	S	Fk	GD	Hyd	Y	10	3-5	24*	101	42*	20½‡	106‡	176½‡	145¾‡	178‡	104	29	80	160
..... LT-72	10000	120806	S	Fk	GE	Hyd	Y	10	5	24*	111½	42*	17½‡	86‡	136‡	109‡	138‡	115	27	88½	171½
..... LT-90	15000	163006	S	Fk	GE	Hyd	Y	10	3	24*	134	42*	22‡	95‡	147¾‡	106¼‡	148‡	145	43	104	206
Transitier																					
..... 100	1000	2280	S	Fk	GE	Hyd	Y	10	4	15	70	48‡	8½	78‡	128‡	180‡	128	61	.....	68	118
..... 200	2000	3100	S	Fk	GE	Hyd	Y	10	4	15	70	48‡	8	78‡	128‡	180‡	128	61	.....	68	118
..... 250	2000	3600	S	Fk	GE	Hyd	Y	10	4	24	74	48‡	8	78‡	128‡	180‡	128	64	.....	70	122
..... 300	3000	4400	S	Fk	GE	Hyd	Y	10	4	24	74	48‡	10	82‡	132‡	180‡	132	64	.....	70	122
..... 200W	2000	3300	S	Fk	GE	Hyd	Y	10	4	15	70	48‡	8	78‡	128‡	Sp	128	61	.....	68	118
..... 250W	2000	3700	S	Fk	GE	Hyd	Y	10	4	24	70	48‡	8	78‡	128‡	Sp	128	64	.....	70	122
..... 300W	3000	4500	S	Fk	GE	Hyd	Y	10	4	18	74	48‡	10	82‡	132‡	Sp	132	64	.....	70	122
..... 400	4000	6600	S	Fk	GE	Hyd	Y	14	4	24	95	54‡	72‡	93‡	167‡	144‡	167‡	85	7½	75	145
..... 600	6000	7980	S	Fk	GE	Hyd	Y	14	4	24	98	54‡	72‡	93‡	167‡	144‡	167‡	95	7½	75	145
Yale & Towne KG81AT-J10	1000	3085	S	Fk	GE	Hyd	Y	10	3	24‡	58¼	38*	12¾	68‡	121½‡	108‡	129	58	5	64	118
..... KG81AT-10	1000	3135	S	Fk	GE	Hyd	Y	10	3	24‡	58¼	38*	18¾	90‡	162½‡	146‡	167	58	5	64	118
..... KG51T-J10	1000	3085	S	Fk	GE	Hyd	Y	10	3	24‡	58¼	38*	47	68‡	121½‡	108‡	129	58	5	64	118
..... KG81T-10	1000	3135	S	Fk	GE	Hyd	Y	10	3	24‡	58¼	38*	69	90‡	162½‡	146‡	167	58	5	64	118
..... KG81AT-J15	1000	3700	S	Fk	GE	Hyd	Y	10	3	24‡	62	38*	13¼	68‡	121½‡	108‡	129	60	6	64	120
..... KG51AT-15	1500	3770	S	Fk	GE	Hyd	Y	10	3	24‡	62	38*	19¼	90‡	162½‡	146‡	167	60	6	64	120
..... KG51T-J15	1500	3700	S	Fk	GE	Hyd	Y	10	3	24‡	62	38*	47	68‡	121½‡	108‡	129	60	6	64	120
..... KG81T-15	1500	3770	S	Fk	GE	Hyd	Y	10	3	24‡	62	38*	69	90‡	162½‡	146‡	167	60	6	64	120
..... KG81AT-30	3000	6850	S	Fk	GE	Hyd	Y	11½	6½	24‡	77¾	38*	17	90‡	161‡	144‡	178	73	6	71	137
..... KG81T-30	3000	6850	S	Fk	GE	Hyd	Y	11½	6½	24‡	77¾	38*	64	90‡	161‡	144‡	178	73	6	71	137
..... KG81AT-40	4000	7150	S	Fk	GE	Hyd	Y	11½	6½	24‡	80½	38*	17	90‡	161‡	144‡	178	75	6	72	140
..... KG81T-40	4000	7150	S	Fk	GE	Hyd	Y	11½	6½	24‡	80½	38*	64	90‡	161‡	144‡	178	75	6	72	140
..... KGP81AT-40	4000	7525	S	Fk	GE	Hyd	Y	11½	6	24‡	103	38*	17	92‡	163‡	144‡	178	75	7½	82	140
..... KGP81T-40	4000	7525	S	Fk	GE	Hyd	Y	11½	6	24‡	103	38*	64	92‡	163‡	144‡	178	75	7½	82	140
..... KG81AT-80	8000	7950	S	Fk	GE	Hyd	Y	11½	8½	24‡	83¾	38*	17	90‡	161‡	144‡	178	79	7	73	142
..... KG81T-80	8000	7950	S	Fk	GE	Hyd	Y	11½	8½	24‡	83¾	38*	64	90‡	161‡	144‡	178	79	7	73	142
..... KG81AT-60	6000	8750	S	Fk	GE	Hyd	Y	11½	8½	24‡	86¾	38*	17	90‡	161‡	144‡	178	83	8	76	147
..... KG81T-60	6000	8750	S	Fk	GE	Hyd	Y	11½	8½	24‡	86¾	38*	64	90‡	161‡	144‡	178	83	8	76	147
..... KGP81AT-60	6000	9300	S	Fk	GE	Hyd	Y	11½	6	24‡	109¾	38*	17	92‡	163‡	144‡	178	113	7½	91	182
..... KGP81T-60	6000	9300	S	Fk	GE	Hyd	Y	11½	6	24‡	109¾	38*	64	92‡	163‡	144‡	178	113	7½	91	182
..... KGS81AT-60	6000	9050	S	Fk	GE	Hyd	Y	8	3	24‡	92½	38*	17	90‡	161‡	144‡	178	89	8	78	153
..... KG81AT-70	7000	9600	S	Fk	GE	Hyd	Y	11½	6½	24‡	89¼	38*	22	90‡	156‡	132‡	178	85	8	76	156
..... KGS81AT-70	7000	9075	S	Fk	GE	Hyd	Y	8	3	24‡	99¼	38*	22	90‡	156‡	132‡	178	99	12	84	164
..... KGP81AT-70	7000	10000	S	Fk	GE	Hyd	Y	11½	6	24‡	113	38*	22	92‡	157‡	132‡	188	116	7½	92	185
..... KG81AT-80	8000	10200	S	Fk	GE	Hyd	Y	11½	6½	24‡	94½	38*	22	90‡	156‡	132‡	178	91	9	80	155
..... KGP81AT-80	8000	11000	S	Fk	GE	Hyd	Y	11½	6	24‡	113	38*	22	92‡	157‡	132‡	188	116	7½	94	185
..... KG81AT-100	10000	12300	S	Fk	GE	Hyd	Y	11	5	24‡	106½	42*	26	90‡	150‡	124‡	161¼	103	12	84	168
..... K81AT-J10	1000	2010	S	Fk	EM	Hyd	Y	10	3	24‡	87¾	38*	11	68‡	121‡	108‡	129	58	.....	64	117
..... K81AT-10	1000	2080	S	Fk	EM	Hyd	Y	10	3	24‡	87¾	38*	17	90‡	162‡	146‡	167	58	.....	64	117
..... K81T-J10	1000	2080	S	Fk	EM	Hyd	Y	10	3	24‡	87¾	38*	47	68‡	121‡	108‡	129	58	.....	64	117
..... K81T-10	1000	2140	S	Fk	EM	Hyd	Y	10	3	24‡	87¾	38*	69	90‡	162‡	146‡	167	58	.....	64	117
..... K81AT-J15	1500	2350	S	Fk	EM	Hyd	Y	10	3	24‡	87¾	38*	11	68‡	121‡	108‡	129	58	.....	64	118
..... K81AT-15	1500	2120	S	Fk	EM	Hyd	Y	10	3	24‡	62½	38*	17	90‡	162‡	146‡	167	62	.....	68	122
..... K81T-J15	1500	2400	S	Fk	EM	Hyd	Y	10	3	24‡	87¾	38*	47	68‡	121‡	108‡	129	58	.....	64	118
..... K81T-15	1500	2160	S	Fk	EM	Hyd	Y	10	3	24‡	62½	38*	69	90‡	162‡	146‡	167	62	.....	68	122
..... K81AT-J20	2000	2990	S	Fk	EM	Hyd	Y	10	3	24‡	89½	38*	11	68‡	121‡	108‡	129	58	.....	64	118
..... K81AT-20	2000	2480	S	Fk	EM	Hyd	Y	10	3	24‡	62½	38*	17	90‡	162‡	146‡	167	62	.....	68	122
..... K81T-J20	2000	3040	S	Fk	EM	Hyd	Y	10	3	24‡	89½	38*	47	68‡	121‡	108‡	129	58	.....	64	119
..... K81T-20	2000	2510	S	Fk	EM	Hyd	Y	10	3	24‡	62½	38*	69	90‡	162‡	146‡	167	62	.....	68	122
..... K81AT-30X	3000	3860	S	Fk	EM	Hyd	Y	10	3	24‡	70¾	38*	21	90‡	161‡	144‡	166	70	.....	68	131

For abbreviations and references see page 308

For Directory of the Industrial Truck Manufacturers listed above, see page 263

POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS—*con.*

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.)—Excluding Battery	Operator—Sits, Stands, Walks	Lift—Fork or Platform	POWER: Motive	POWER: Lifting	MAST: Telescopic	MAST: Tilt Rearward (Deg.)	MAST: Tilt Forward (Deg.)	OVERALL DIMENSIONS: Load Center (In.)	Length (In.): Less Forks	Length (In.): Fork (Max.)	Height (In.): Free Lift	Height (In.): Mast Collapsed	Height (In.): Mast Extended	Height (In.): Lifting	Height (In.): Overall Including Carriage or Backguard	TURNING RADIUS (In.) With 40" x 48" Pallet: Outside (Tailswing)	Inside	Intersecting Aisle Width	Minimum Aisle for Right Angle Stacking
Yale & Towne—Cont'd.																					
K51AT-30	3000	4680	S	Fk	EM	Hyd	Y	10	3	24	73¼	36*	17	90	161	144	178	75		72	139
K51T-30X	3000	3730	S	Fk	EM	Hyd	Y	10	3	24	70¾	36*	69	90	161	144	166	70		68	131
K51T-30	3000	4680	S	Fk	EM	Hyd	Y	11½	6½	24	73¼	36*	64	90	161	144	178	75		72	139
K51AT-4015X	4000	3960	S	Fk	EM	Hyd	Y	10	3	15	70¾	36*	21	90	161	144	166	70		68	131
K51AT-4015	4000	4870	S	Fk	EM	Hyd	Y	11½	6½	15	73¼	36*	17	90	161	144	178	75		72	139
K51T-4015X	4000	3960	S	Fk	EM	Hyd	Y	10	3	15	70¾	36*	69	90	161	144	166	70		68	131
K51T-4015	4000	4870	S	Fk	EM	Hyd	Y	11½	6½	15	73¼	36*	64	90	161	144	178	75		72	139
K51AT-40	4000	5480	S	Fk	EM	Hyd	Y	11½	6½	24	74½	36*	17	90	161	144	178	75		72	139
K51T-40	4000	5480	S	Fk	EM	Hyd	Y	11½	6½	24	74½	36*	64	90	161	144	178	75		72	139
K51AT-50	5000	5750	S	Fk	EM	Hyd	Y	11½	6½	24	81	36*	17	90	161	144	178	82		75	146
K51T-50	5000	5750	S	Fk	EM	Hyd	Y	11½	6½	24	81	36*	64	90	161	144	178	82		75	146
K51AT-60	6000	6250	S	Fk	EM	Hyd	Y	11½	6½	24	81	36*	17	90	161	144	178	84		78	148
K51AT-70	7000	6800	S	Fk	EM	Hyd	Y	11½	6½	24	85	36*	22	90	155	132	166	86		77	160
K51AT-80	8000	6870	S	Fk	EM	Hyd	Y	11½	6½	24	90¾	36*	22	90	155	132	166	91		81	166
K51AT-100	10000	10660	S	Fk	EM	Hyd	Y	11	5	24	95	42*	30	90	150½	124	161¼	91		84	167
K33GH-50	50000		St	Ptf	EM	Ch	N	N	N				52	112*	112*	79*	112*	151		122	169
K41-4	4000		St	Fk	EM	Ch	Y	10	5	24	78½	36*	63	83		119	153	73	23	72	136
K41-5	5000		St	Fk	EM	Ch	Y	6	2	24	81¼	36*	63	83		119	153	84	27	75	147
K41-6	6000		St	Fk	EM	Ch	Y	6	2	24	82	36*	62	83		118	152	85	28	77	148
K41-7	7000		St	Fk	EM	Ch	Y	6	2	24	86½	36*	62	83		118	152	87	28	80	153
K41-8	8000		St	Fk	EM	Ch	Y	6	3	24	90¾	42*	58	83*		107*	141	94	32	82	158
K41-10	10000		St	Fk	EM	Ch	Y	6	2	30	106¼	36*	66	96*		110*	146	104	33	93	174
K41-12	12000		St	Fk	EM	Ch	Y	6	2	24	106¼	36*	66	96*		110*	146	104	33	93	174
K41-12	12000		St	Fk	EM	Ch	N	6	2	30	113¼	48*	88	96*		58*	98	106	32	97	175
K41-14	14000		St	Fk	EM	Ch	N	5	2	30	113¼	48*	88	96*		58*	98	106	32	97	173
K41-15	15000		St	Fk	EM	Ch	N	5	2	30	113¼	48*	88	96*		58*	98	106	3	97	175
K41-16	16000		St	Fk	EM	Ch	N	5	2	30	123	48*	88	96*		54*	98	119	4	104	185
K41-18	18000		St	Fk	EM	Ch	N	5	2	30	123	48*	94	96*		54*	98	119	4	104	185
K51-200	20000		St	Fk	EM	Hyd	N			48	161½		76	148*		76*	150	184	3	135	229
K51-250	25000		St	Fk	EM	Hyd	N			48	161½		76	148*		76*	150	154	3	135	225
K51-300	30000		St	Fk	EM	Hyd	N	N	N	48	162		76	148*		76*	150	154	3	135	225
K51-400	40000		St	Fk	EM	Hyd	N	N	N	48	167		72	148*		72*	150	156	3	139	226
K51-500	50000		St	Fk	EM	Hyd	N	N	N	48	169		61	148*		61*	150	184	3	167	255
K51-600	60000		St	Fk	EM	Hyd	N	N	N	48	173		61	148*		61*	150	185	3	168	258
K51-800	80000		St	Fk	EM	Hyd	N	N	N	30	173		61	148*		61*	150	185	3	168	258
KM4H	4000	2510	St	Ptf	EM	Ch	Y	N	N				61	83	138	115	139	87	39	63	133
K22-4	4000	3800	St	Ptf	EM	Ch	Y	N	N				51	83	666	113		90	43	66	153
K25-6	6000	4735	St	Ptf	EM	Ch	Y	N	N				62	83*		113*		103	46	71	167
K25H-6	6000	4850	St	Ptf	EM	Ch	Y	N	N				67	83*		116*		102	46	67	154
K33-10	10000	6380	St	Ptf	EM	Ch	Y						57					124½	64½	78	182
K33H-12	12000	7600	St	Ptf	EM	Ch	N	N	N				63	83*		83*	84	125½	66	78	183
K33SH-16	16000	8100	St	Ptf	EM	Ch	N	N	N				56	83*		56*	84	126	64	76	184
K33GH-20	20000		St	Ptf	EM	Ch	N	N	N				72					164	90	95	245
K33GH-30	30000		St	Ptf	EM	Ch	N	N	N				75					137		105	165
K33GH-40	40000		St	Ptf	EM	Ch	N	N	N				75					137		113	167
M16HF	1000	1755	W	Fk	EM	Hyd	N	N	N	8	44¼	24*	84½	83		66	89	61		61	96
M15HF	1500	2061	W	Fk	EM	Hyd	N	N	N	10	48¼	24*	84½	83		66	89	48		61	100
M15HTF	1500	2780	W	Fk	EM	Hyd	N	10	2	24	57½	30*	84	83		60	89	54		63	109
M15TTF	1500	3155	W	Fk	EM	Hyd	Y	10	2	24	57½	30*	69¾	83	142½	120	149	54		63	109
M20HTF	2000	2905	W	Fk	EM	Hyd	N	10	2	24	63¾	30*	64	83	83	60	89	60½		65	116
M20TTF	2000	3180	W	Fk	EM	Hyd	Y	10	2	24	63¾	30*	69¾	83	142½	120	149	60½		65	116
M25HTF	2500	3105	W	Fk	EM	Hyd	N	10	2	24	67¾	30*	64	83	83	60	89	64		66½	119
M25TTF	2500	3480	W	Fk	EM	Hyd	Y	10	2	24	67¾	30*	69¾	83	142½	120	149	64		66½	119
M30HTF	3000	3430	W	Fk	EM	Hyd	N	10	2	24	77	30*	64	83	83	66½	87½	72		70	128
M30TTF	3000	3805	W	Fk	EM	Hyd	Y	10	2	24	77	30*	67½	83	138½	113½	142¼	72		70	128
M30SF	3000		W	Fk	EM	Hyd	N	N	N	24	34½	36*	64	83		64	90	67½		67½	87
M30STF	3000		W	Fk	EM	Hyd	N	N	N	24	34½	36*	19	83	1432	123½	182½	67½		67½	87
M40SF	4000		W	Fk	EM	Hyd	N	N	N	24	38	42*	54	83		63½	90	76½		75	92½
M40STF	4000		W	Fk	EM	Hyd	N	N	N	24	38	42*	61	83	1432	121½	150	76½		75	92½
M4HL7	4000	1780	W	Ptf	EM	Hyd	N	N	N	30				83		66½	83				
M4HL11	4000	1780	W	Ptf	EM	Hyd	N	N	N	30				83		70½	83				
M25HLP	2500	1320	W	Fk	EM	Hyd	N	N	N	21	39	42½	66	83		66½	83				
M30HLT	3000	2675	W	Ptf	EM	Hyd	Y	N	N	30			27	83		123½	142				
M40HLT	4000	3025	W	Ptf	EM	Hyd	Y	N	N	30			27	83		123½	142				
RSA-2	2000	2400	St	Fk	EM	Hyd	N	N	N	24	29¼			90		76½				63	74
RSAT-2	2000	2900	St	Fk	EM	Hyd	Y	N	N	24	29¼		21	90	170½	147½	176			63	74
RST-2	2000	2870	St	Fk	EM	Hyd	Y	N	N	24	29¼		53	90	170½	147½	176			63	74
RSA-3	3000	2480	St	Fk	EM	Hyd	N	N	N	24	29¼			90		76½				63	74
RSAT-3	3000	2850	St	Fk	EM	Hyd	Y	N	N	24	29¼			90	170½	147½	176			63	74
RST-3	3000	2720	St	Fk	EM	Hyd	Y	N	N	24	29¼		53	90	170½	147½	176			63	74
GS2-2024	2000	4125	S	Fk	GL	Hyd	Y	10	5	24	70½	30*	21	90	165	144	165	67		67	109
GS2T-2024	2000	4125	S	Fk	GL	Hyd	Y	10	5	24	70½	30*	62	90	165	144	165	67		67	109
GS2-3024	3000	4735	S	Fk	GL	Hyd	Y	10	5	24	73½	30*	21	90	165	144	165	69¾		68½	112
GS2T-3024	3000	4735	S	Fk	GL	Hyd	Y	10	5	24	73½	30*	62	90	165	144	165	69¾		68½	112
GS2-4015	4000	4735	S	Fk	GL	Hyd	Y	10	5	15	73½	30*	21	90	165	144	165	69¾		68½	112
GS2T-4015	4000	4735	S	Fk	GL	Hyd	Y	10	5	15	73½	30*	62	90	165	144	165	69¾		68½	112
GPS2-2024	2000	4425	S	Fk	GL	Hyd	Y	10	5	24	72¾	30*	21	90	160½	140	160½	75		80	120
GPS2V-2024	2000	4425	S	Fk	GL	Hyd	Y	10	5	24	72¾	30*	48	90	160½	140	160½	78		80	120
KS3AT-2024	2000	3080	S	Fk	EM	Hyd	Y	10	5	24	71¾	30*	21	83	151	130	151	71		61	119
KS3T-2024	2000	3080	S	Fk	EM	Hyd	Y	10	5	24	71¾	30*	62	83	151	130	151	71		61	119
K46T-2024	2000	3460	St	Fk	EM	Hyd	Y	10	5	24	85	30*	62	83	150½	130	150½	84		68	112
K46AT-3024	3000	3550	St	Fk	EM	Hyd	Y	10	5	24	87½	30*	21	83	150½	130	150½	84			
K46T-3024	3000	3550	St	Fk	EM	Hyd	Y	10	5	24	87½	30*	62	83	150½	130	150½	84			
K46AT-4015	4000	3550	St	Fk	EM	Hyd	Y	10	5	24	87½	30*	21	83	150½	130	150½	84			
K46T-4015	4000	3550	St	Fk	EM	Hyd	Y	10	5	24	87½	30*	62	83	150½	130	150½	84			
KS3AT-3024	3000	3150	S	Fk	EM	Hyd	Y	10	5	24	73¾	30*	21	83	151	130	151	71		62	120
KS3T-3024	3000	3150	S	Fk	EM	Hyd	Y	10	5	24	73¾	30*	62	83	151	130	151	71		62	120
KS3AT-4015	4000	3150	S	Fk	EM	Hyd	Y	10	5	15	73¾	30*	21	83	151	130	151	71		62	120
KS3T-4015	4000	3150	S	Fk	EM	Hyd	Y	10	5	15	73¾	30*	62	83	151	130	151	71		62	120

For abbreviations and references see page 308

For Directory of the Industrial Truck Manufacturers listed above, see page 263

POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS—*con.*

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.) Excluding Battery	Operator—Sits, Stands, Walks	Lift—Fork or Platform	POWER: Motive	POWER: Lifting	MAST: Telescopic	MAST: Tilt: Rearward (Deg.)	MAST: Tilt: Forward (Deg.)	OVERALL DIMENSIONS: Load Center (In.)	OVERALL DIMENSIONS: Length (In.): Less Forks	OVERALL DIMENSIONS: Length (In.): Fork (Max.)	OVERALL DIMENSIONS: Height (In.): Free Lift	OVERALL DIMENSIONS: Height (In.): Mast: Collapsed	OVERALL DIMENSIONS: Height (In.): Mast: Extended	OVERALL DIMENSIONS: Height (In.): Lifting	OVERALL DIMENSIONS: Height (In.): Overall—Including Carriage or Backguard	TURNING RADIUS (In.) With 40" x 48" Pallet: Outside (Tailswing)	TURNING RADIUS (In.) With 40" x 48" Pallet: Inside	TURNING RADIUS (In.) With 40" x 48" Pallet: Intersecting Aisle Width	TURNING RADIUS (In.) With 40" x 48" Pallet: Minimum Aisle for Right Angle Stacking
Yale & Towne—Cont'd																					
K46AT-4024	2000	3400	St	Fk	EM	Hyd	Y	10	5	24‡	65½	30*	21	83‡	150½‡	130‡	150½	64		98	112
M10ATF	1000		W	Fk	EEG	Hyd	Y	7	2	24‡	47	30*	18	90‡	168‡	144‡	168	44			
M15ATF	1500	3150	W	Fk	EEG	Hyd	Y	10	2	24‡	57½	30*	18	90‡	168‡	144‡	168	54		94	92½
M20ATF	2000	3180	W	Fk	EEG	Hyd	Y	10	2	24‡	63¼	30*	18	90‡	168‡	144‡	168	60½		97	99
M25ATF	2500	3480	W	Fk	EEG	Hyd	Y	10	2	24‡	68¾	30*	18	90‡	168‡	144‡	168	64		99	102½
M30ATF	3000	3865	W	Fk	EEG	Hyd	Y	10	2	24‡	76	30*	18	90‡	168‡	144‡	168	72		63	112
M30HLTP	3000	2580	W	Fk	EEG	Hyd	Y			21‡	48¼	42*	22	83‡	142‡	120‡	142	77		67	83
M40HLTP	4000	2740	W	Fk	EEG	Hyd	Y			21‡	49¾	42*	22	83‡	142‡	120‡	142	77		67	83
KM31A-4	4000	5500	St	Fk	EEG	Hyd	Y	10	3	24‡	95	36*	55	83‡	153‡	119‡	153	104		74	130
KM31A-6	6000		St	Fk	EEG	Hyd	Y	10	3	24‡	95	36*	55	83‡	153‡	119‡	153				
RSEAT-2	2000		St	Fk	EM	Hyd	Y		4	24*	29¾	30*		83¼	178¼	126¼				64	87
RSFFAT-2	2000		St	Fk	EM	Hyd	Y			24*	27¾	30*		83¼		126¼				57	65

ABBREVIATIONS

*—Including battery.
†—Without load.
△—Standard.
■—Including forks or platform.
•—With 36" x 36" load.
‡—Maximum.
▲—Minimum.
‡—With 48" load.
**—Includes battery and counterweight.
Ch—Chain.
DE—Diesel engine.
EEG—Electric motor or electric motor and gasoline engine.
EG—Electric motor and gasoline engine.
EGD—Electric motor, gasoline engine or diesel engine.
EM—Electric motor.
Fk—Fork.
FkR—Fork or ram.
FR—Fork ram.
GD—Gasoline or diesel engine.
GDL—Gasoline, diesel or L.P.G. engine.
GE—Gasoline engine.
GL—Gasoline or L.P.G. engine.
HC—Hydraulic and chain.
Hyd—Hydraulic.
N—No or none.
Opt—Optional.
Ptf—Platform.
R—Ram.
S—Sits.
SP—Built to specifications.
Ss—Sits or stands.
St—Stands.
W—Walks.
Var—Variable.
Y—Yes.

POWERED NON-LIFT PLATFORM TRUCKS

Due to space limitations basic models only are presented for each of the companies represented. Variations, to fit the needs of the individual user are available from any of the manufacturers listed.

MAKE AND MODEL	Rated Capacity (Lbs.)	Service Weight (Lbs.)	OPERATOR: Rides or Walks	OPERATOR: Sits or Stands	Motive Power	Frame Type	Controls & Steering	OVERALL TRUCK DIMENSIONS (Ins.): Width	OVERALL TRUCK DIMENSIONS (Ins.): Length	OVERALL TRUCK DIMENSIONS (Ins.): Height	OVERALL TRUCK DIMENSIONS (Ins.): Wheelbase	PLATFORM DIMENSIONS (Ins.): Length	PLATFORM DIMENSIONS (Ins.): Width	PLATFORM DIMENSIONS (Ins.): Height from Ground	No. of Drive Wheels	No. of Steering Wheels	TURNING RADIUS (Ins.): Inside	TURNING RADIUS (Ins.): Outside	TURNING RADIUS (Ins.): Intersecting Aisle Width	Dead Man Brake
Atlas HP-3	6000	3800	R	St	EM			46	111	80	88	90	46	25½	2	4	36	93	68	Y
3-LWH	6000	3900	R	St	E-G			42	116½	80	88	90	42	11	2	4	37	92	66	Y
Automatic FP-20	2000	1635	R	S	EM	Str	1	40	109		60	80½	40	14¾	2	4	24	90	66	Y
HN-2	4000	3730	R	St	EM	Str	1	39	114½		65	84	38	12¾	2	4	50	102	64	Y
HN-3	6000	4700	R	St	EM	Str	1	41	118½		65	84	41	12¾	2	4	48	103	69	Y
EN-2	4000	4060	R	St	EM	Str	1	46	105¾		65	84	46	24	2	4	41	98	69	Y
EN-3	6000	4255	R	St	EM	Str	1	46	107		65	84	46	22¾	2	4	41	100	69	Y
Crescent PDB-4	4000	4000	R	St	EM	Dr	1	42	118½	82½	67	88	42	12	2	4	100		88	Y
RDB-6	6000	5600	R	St	EM	Dr	1	42	118½	82½	67	88	42	12	2	4	100		88	Y
RSE-10	10000	3900	R	St	EM	Str	1	42	112½	63½	96½	90	42	26	2	4	101		67	Y
Elwell-Parker FH-6	6000	2900	R	St	E-G	Str	1	42½	124¼	52	90	64	41	12½	2	4	45	105	70	Y
WH-6	6000	2975	R	St	E-G	Str	1	42½	146½	58	78	86	41	17¼	2	4	61	123	78	Y
IE	6000	2475	R	St	E-G	Str	1	40	111¼	58½	80	64	40	25	2	4	45	101	69	Y
5E	4000	2650	R	St	E-G	Str	2	45	150	54	83½	136¾	44	34	2	4	71	138	89	Y
HH CC47	4000	2850	R	S	GE	Str	1	(1)	180		96	100	60	25	2	2				N
CC50	4000	3300	R	S	GE	Str	1	60	168		96	100	60	25	2	2				N
SP, CC52-4WB	4000	2830	R	S	GE	Str	1	46	164		90	120	46	25	2	2				N
53	2000	(2)	R	S	GE	Str	1	(3)	111*	54	60*	(4)	(3)		2	2				N
Hyster Cargo Truck	6000	1510	R	St	GE	Str	1	42	103½	56	73½	60	42	7¼	1	2	0	69	72	N
Kalamazoo 2000	2500	1150	R		GE	Str	1	42	96	48	58¼	54	42	19½	2	1	5½	79½		Opt
Kwik Mix 510	1500	880	R	St	GE	Str	1	34	80	48½	34¼	48	34	20	2	2	6	61	53	Y
R15	2000	1100	R	S	GE	Str	1	38	94	48	43½	54	34	22	2	2	6	73	60	N
Market Forge Freight Truck	6000	950†	R	Sst	E-G	Str	1	38	92¼	48	58½	87	38	11½	2	2	3	74	48	Y
Mercury A-823	2000	1250†	R	S	EM	Str	1	40	111¼	51½	63	(5)	40	22	2	1		82		Y
A-1014	4000	2700†	R	St	EM	Str	1	46	112	56	61	88	46	27½	2	2		97	88	Y
A-1014	6000	2850†	R	St	EM	Str	1	46	112	56	61	88	46	27½	2	2		97	88	Y
A-1015	4000	2800†	R	St	EM	Dr	1	41	120½	56	71	72	41	11½	2	2		105	86	Y
A-1015	6000	2700†	R	St	EM	Dr	1	41	120½	56	71	72	41	11½	2	2		105	86	Y
Whiteman UPG	2000	1050	R	S	GE	Str	1	44	108	48	54	63	44	19	2	2		108	72	N
Yale & Towne K20-6	6000	2530	R	St	E-G	Str	1	42	108½	51	61	88¼	42	25½	2	4	47	104	67	Y
FM20	2000	1225	R	S	E-G	Str	1	40	96		62	96	42	22	2	1		83	66	Y
K32	4000	3300	R	St	E-G	Str	2	46	176	84	126½	148	46	(6)	2	4	102	168	94	Y
K36	4000	3300	R	St	E-G	Dr	2	46	176	84	126½	148	46	34	2	4	102	166	94	Y

ABBREVIATIONS

*—Maximum.
†—Without battery.
(1)—48 and 60.
(2)—1,700 to 2,300.
(3)—48 to 72.
(4)—72 to 144.
(5)—61½ to 88.
(6)—11 and 34.
Dr—Drop.
E-G—Electric or gas-electric.
EM—Electric motor.
GE—Gasoline engine.
N—No or none.
Opt—Optional.
R—Rides.
S—Sits.
Sst—Sits or stands.
St—Stands.
Str—Straight.
Y—Yes.

For Directory of the Industrial Truck Manufacturers listed above, see page 263

POWERED LOW-LIFT FORK OR PLATFORM TRUCKS

Due to space limitations basic models only are presented for each of the companies represented. Variations, to fit the needs of the individual user, are available from any of the manufacturers listed.

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.) Excluding Battery	Operator—Walks or Rides	POWER: Motive	POWER: Lifting	OVERALL CHASSIS DIMENSIONS (Ins.): Length, Excluding Platform or Forks	Width	Height—To Top of Controls	Lowest Underclearance	PLATFORM DIMENSIONS (Ins.): Length: Minimum	Length: Maximum	Width: Minimum	Width: Maximum	Height Above Ground: Minimum	Height Above Ground: Maximum	FORK DIMENSIONS (Ins.): Length: Minimum	Length: Maximum	Width of Face	Lateral Outside Overall Width: Minimum	Lateral Outside Overall Width: Maximum	Height Above Ground: Lowered	Height Above Ground: Elevated
Atlas 3EA17	6000	4400*	R	E-G		122†	40½		3⅛	54*		27*		11	17							
Automatic LN-2	4000	2475	R	EM	Hyd	112½†	39†			55*		26*		10¼	16¼							
LN-3	6000	3150	R	EM	Hyd	112½†	41†			55*		27*		10¾	16¾							
LO-5	10000	4500	R	EM	Mec	126½†	41†			60*		26*		11	16							
PE-427	4000		W	EM	Hyd	30½	30	50	1⅝							29½	50½	9*	27*		3⅛	85⅛
PE-627	6000		W	EM	Hyd	30½	30	50	1⅝							29½	50½	9*	27*		3⅛	75⅛
TNE-4	4000		W	EM	Hyd	31½	30	50	2⅝	36	72	20*		(1)	(2)							
TWE-4	4000		W	EM	Hyd	31½	30	50	2⅝	36	72	26½*		(1)	(2)							
TNE-6	6000		W	EM	Hyd	31½	30	50	2⅝	36	72	20*		(1)	(2)							
TWE-6	6000		W	EM	Hyd	31½	30	50	2⅝	36	72	26½		(1)	(2)							
TWH-4	4000		W	EM	Hyd	33⅝	38	50	2½	30	60	27		6½	21							
TWH-6	6000		W	EM	Hyd	33⅝	38	50	2½	30	60	27		6½	21							
ETWE-4	4000		R	EM	Hyd	29½	32		2½	36	72	26½		(1)	(2)							
EPE-4	4000		R	EM	Hyd	29½	32		1¼							30	60	9*	27*		3⅛	75⅛
Baker E-3	6000	3500	R	E-G	Hyd	70⅝	42¼	58½	4	55	84	26½	48	10⅛	16¼							
E-6	10000	4800	R	E-G	Hyd	71⅝	42¾	58½	4	60	96	26½	48	10⅝	16¼							
Barrett PO-40	4000	1625	W	EM	Hyd	38‖	36	59‖	1⅝	36	60	24¾		6½								
PO	4000	1132	W	EM	Hyd	32⅝	27⅛	59‖	3⅛	36	72	20		(1)	(3)							
POK	4000	1176	W	EM	Hyd	32⅝	27⅛	59‖	3⅛	36	72		25	(1)	(3)							
PX	4000	1145	W	EM	Hyd	33	27⅛	59‖	⅛							30	60	9	27		3¼	71¼
STF-40	4000	1835	W	EM	Hyd	38‖	32¼	59‖	1½							24	48	4	8	32	2	68
Budo CB-20	2000	1380	R	GE		97†	40†	50	3													
Clark 40LP	4000	940*	W	E-G	Hyd	28⅛	32	52	2½	36	72	18	26	6	10¼							
60LP	6000	970*	W	E-G	Hyd	28⅛	32	52	2½	36	72	18	26	6	10¾							
40P	4000	1040*	W	E-G	Hyd	28⅛	32	52	2⅝							30	60	9¼	27*		3¼	71¼
60P	6000	1070*	W	E-G	Hyd	28⅛	32	52	2⅝							30	60	9¼	27*		3¼	71¼
Coleon S-4	4000	1075	R	GE	Hyd	30	29		3⅛	30	72	24*		(4)	(5)							
Crescent PLA-4	4000		R	E-G	Hyd	110	38		4	48		24		7	20							
PLB-4	4000		R	E-G	Hyd	115	38		4	48		24		7	20							
KLB-10	10000		R	E-G	Hyd	130	42		4½	60		27		11	24							
Elwell-Parker EQ-4	4000	2100	R	EM	Mec	98¼†	31¼†	54⅛	3	41	66	24	29½	10½	15							
EQ-4	4000	2100	R	EM	Mec	87¼†	31¼†	54⅛	2⅝	41	60	18½	29½	7	10¼							
EP-4-11	4000	3150	R	EM	Mec	119⅝†	43†	58½	4	64	120	28½	36	10⅝	16½							
EP-6	6000	3200	R	EM	Mec	119⅝†	42¾†	58	4	64	120	28½	36	10⅝	16½							
GEP-6	6000	3900	R	GE	Hyd	125†	42¾†	58	4	64	120	28½	36	10⅝	16½							
EW-6	6000	3450	R	EM	Mec	120½†	42¾†	58	10⅛	64	108	28½	36	16½	22½							
EP-10	10000	3600	R	EM	Mec	129†	43†	58½	3⅝	60	120	28½	40	11	16⅝							
GEP-10	10000	4200	R	GE	Hyd	132†	42¾†	58	3⅝	60	120	28½	40	11	16⅝							
EY-ZO	20000		R	EM	Hyd	148¾†	45†	58	5	75		41		17½	23½							
L-13	20000		R	EM	Hyd	155¼†	48†	58	2½	72		28½		11¼	17¼							
L-12	20000		R	EM	Hyd	160½†	50	58	2	96		36		11½	17							
L-3	30000		R	EM	Hyd	138½†	56½	60	8	60		50		18	24							
L-14	40000		R	EM	Hyd	187	56½	60	6	96		41		17½	23½							
Erickson P-5	5000	2700	R	GE	Hyd	60	40	65	7	60	Var	Var	Var	11	21							
P-7	7000	3000	R	GE	Hyd	60	40	65	7	60	Var	Var	Var	11	21							
Kalamazoo 301	800	1000	R	GE	Hyd	63¼	33½	45	4							18	25	3⅛	6	32	1¼	10⅝
Lewis-Shepard M4P	4000	1890	R	EM	Hyd	29½	42	60	1							36	60	9¼6	25	36	3¼	71¼
M4N	4000	1790	R	EM	Hyd	21½	42	60	2	36	72	18		(1)	(6)							
M4W	4000	1790	R	EM	Hyd	21½	42	60	3	30	72		36	(1)	(6)							
E4P	4000	1050	W	EM	Hyd	33	32	54	1							32	60	9¼6	25	36	3¼	71¼
E6P	6000	1250	W	EM	Hyd	33	32	54	1							32	60	9¼6	25	36	3¼	71¼
E4TP	4000	1000	W	EM	Hyd	33	32	54	1							24	42	66	16		3¼	71¼
E4N	4000	(7)	W	EM	Hyd	25½	32	54	2	36	72	18		(1)	(6)							
E4W	4000	(7)	W	EM	Hyd	25½	32	54	3	30	72		36	(1)	(6)							
E6N	6000	(7)	W	EM	Hyd	25½	32	54	2	36	72	18		(1)	(6)							
E6W	6000	(7)	W	EM	Hyd	25½	32	54	3	30	72		36	(1)	(6)							
Lift Trucks KNS	6000	1300	W	EM	Hyd	31¾	32¼	50¾		36	72	18	20	(1)	(2)							
KMS	6000	1400	W	EM	Hyd	31¾	32¼	50¾		36	72	21	25	(1)	(2)							
KWS	6000	1600	W	EM	Hyd	31¾	32¼	50¾		36	72	29¾		(1)	(2)							
KPNS	4000	1200	W	EM	Hyd	33¾	32¼	50¾	¾							30	60	8¼	22	26	3¼	71¼
KPWS	4000	1300	W	EM	Hyd	33½	32¼	50¾	¾							30	60	10⅛	27		3¼	71¼
Market Forge Skid Lift Truck	6000	(8)	W	E-G	Hyd	43	(9)	45	(10)	30	72	18	26	(1)	(6)							
Pallet Lift Truck	6000	(11)	W	E-G	Hyd	43	28	45	1¼							30	72	11*	27	27	(12)	71¼
Mercury A-1007	3000	2100	R	EM	Hyd	86	33¾		2⅛			18		7	18							
A-1007	4000	2300	R	EM	Hyd	86	33¾		2⅛			18		7	18							
A-1017	4000	3200	R	EM	Hyd	90	41½		4⅛			24		11	23							
A-1029	6000	3400	R	EM	Hyd	90	41½		4⅛			24		11	23							
A-1011	10000	4500	R	EM	Hyd	99½	42		3⅝			28¾		11⅛	22							

For abbreviations and references see page 310

For Directory of the Industrial Truck Manufacturers listed above, see page 263

POWERED LOW-LIFT FORK OR PLATFORM TRUCKS—*con.*

MAKE AND MODEL	Maximum Load Capacity (lb.)	Service Weight (lb.)—Excluding Battery	Operator—Walks or Rides	POWER: Motive	POWER: Lifting	OVERALL CHASSIS DIMENSIONS (Ins.): Length, Excluding Platform or Forks	Width	Height—To Top of Controls	Lowest Undercleorance	PLATFORM DIMENSIONS (Ins.): Length: Minimum	Length: Maximum	Width: Minimum	Width: Maximum	Height Above Ground: Minimum	Height Above Ground: Maximum	FORK DIMENSIONS (Ins.): Length: Minimum	Length: Maximum	Width of Face	Lateral Outside Overall Width: Minimum	Lateral Outside Overall Width: Maximum	Height Above Ground: Lowered	Height Above Ground: Elevated
Raymond EL4P	4000	1360	R	EM	Hyd	30[1]	34	55	2	30	48	18	24	2	(6)							
EL4F	4000	1410	R	EM	Hyd	30	34	55	1½							30	48	9¼^	24	30	3¼	7¼
Revolvator 51121	4000	1060	W	EM	Hyd	34	32	50								32	60	9	25	30	3¼	7¼
52111	4000	1130	W	EM	Hyd	28½	32	50	3½	36	72	18	26½	(1)	(6)							
52121	6000	1090	W	EM	Hyd	34	32	50								32	60	9	25	30	3¼	7¼
52111	6000	1230	W	EM	Hyd	28½	32	50	3½	36	72	18	26½	(1)	(6)							
Towmotor W	4000	920	W	EM	Hyd	30	(13)	48	1							36	72	9*	27*	....	3½	7¼
Yale & Towne KM4L	4000	2100	R	E-G	Lin	54¼	32¼	52	2¼	Var	Var	Var	Var	6¾	10¾							
K23E4	4000	3300	R	E-G	Lin	64	44½	56	4½	Var	Var	Var	Var	11	17							
K23E6	6000	3650	R	E-G	Lin	64	44½	56	4½	Var	Var	Var	Var	11	17							
K26S10	10000	4525	R	E-G	Lin	69	47	56	4½	Var	Var	Var	Var	11¼	17							
K26S16	16000	5000	R	E-G	Lin	62½	45	60	4½	Var	Var	Var	Var	11¼	17							
K26G20L	20000	10475	R	E-G	Lin	81¾	60	66	3¾	Var	Var	Var	Var	11¼	17							
K35-6	6000	3660	R	E-G	Lin	64¾	44½	56	8	Var	Var	Var	Var	17	23							
K26G20H	20000		R	E-G	Lin		60	66	5½	Var	Var	Var	Var	17	23							
M4	4000	1140	W	E-G	Hyd	34¼	31	50	(14)	30	96	18	38	(1)	(6)							
M6	6000	1200	W	E-G	Hyd	34¼	31	50	(14)	30	96	18¼	38¼	(15)	(6)							
M4UW	4000	1735	W	E-G	Hyd	40½	31	50	3¼	36	60	26	26	6	19							
M6UW	6000	1815	W	E-G	Hyd	40½	31	50	3¼	36	60	26¼	26¼	6	19							
M4P	4000	1060	W	E-G	Hyd	37½	31	50	2¾							30	84	9¼^	25	48	3¼	7¼
M6P	6000	1120	W	E-G	Hyd	37½	31	50								30	84	9¼^	25	48	3¼	7¼
M54	4000	1020	W	EM	Hyd	28	31	50	(16)	20	96	18	38	(1)	(6)							
M56	6000	1060	W	EM	Hyd	28	31	50	(16)	20	96	18¼	38¼	(16)	(6)							
M54P	4000	1120	W	EM	Hyd	31½	31	50								30	84	9¼^	25	48	3¼	7¼
M56P	6000	1150	W	EM	Hyd	31½	31	50								30	84	9¼^	25	48	3¼	7¼
M4TP	4000	1000	W	E-G	Hyd	38	31	50	2¾							24	36	5¼^	18	27	3¼	6¼
M7½	7500	....	W	E-G	Hyd	34¾	31	50	3¼	30	96	18¼	38¼	(4)	(5)							
RL-4	4000	....	R	EM	Hyd	25¼	35	53¼	2¾	36	60	19	26	6	15							
RP-4	4000	....	R	EM	Hyd	25¼	35	53¼	2¾							36	60	9¼	25	36	3¾	7¾

ABBREVIATIONS

*—Including battery.
†—Including platform or forks.
▲—Standard.
●—Based on 48" long platform or forks.
▲—Minimum.

(1)—6, 7, 9 or 11.
(2)—9½, 10½, 12½ or 14½.
(3)—12, 13, 15 or 17.
(4)—7, 9 or 11.
(5)—10, 12 or 14.
(6)—10, 11, 13 or 15.
(7)—1,000 to 1,200.
(8)—900 to 1,650 depending on length.
(9)—18 to 26.
(10)—3, 4, 5 or 6.
(11)—1,100 to 1,700 depending on length.
(12)—3¼ adjustable to 4½.
(13)—27 with lead acid battery; 29 with alkaline battery.
(14)—2¼ to 3¼.
(15)—6¾, 7, 9 or 11.
(16)—2¼ to 2¾.
E-G—Electric or gas-electric.
EM—Electric motor.
GE—Gasoline engine.
Hyd—Hydraulic.
Lin—Linkage.
Mec—Mechanical.
R—Rides.
Var—Variable.
W—Walks.

INDUSTRIAL TRUCKS—TOWING TRACTOR TYPE

Due to space limitations basic models only are presented for each of the companies represented. Variations, to fit the needs of the individual user are available from any of the manufacturers listed.

MAKE AND MODEL	Drawbar Pull (Lbs.)	Trailing Load (Tons)—Dry Level Concrete	Weight—Excluding Battery	OPERATOR: Rides or Walks	OPERATOR: Sits or Stands	Motive Power	3 or 4 Point Suspension	DIMENSIONS (Ins.): Wheelbase	Length—Overall	Width—Overall	Height—To Steering Wheel	Underclearance: At Truck Center	Underclearance: Lowest Point	TURNING RADIUS (Ins.): Outside	Inside	Width of Intersecting Aisle	No. of Forward Speeds	No. of Reverse Speeds
Atlas 2-WT-2	2500	60	4000*	R		E-G	4	46½	72	42	60	....	7½	90	....	60	3	3
3-DWT-2	2100	40	4025*	R		E-G	3	46½	72	42	60	....	7½	63½	....	63½	3	3
Automatic FT	250	7	700*	R	S	EM	3	30	46½	29	51¼	3¼	....	46	....	37	3	3
FT-E	250	7	650*	R	St	EM	3	25	52	29	....	3¼	....	37	0	36	3	3
BTN	600	17	4650*	R	S	EM	3	41	68	36	....	6	....	60	0	60	4	4
MN	720	20¼	5300*	R	S	EM	4	46	75½	40	67	3½	....	81	30	59	4	4
BTW	600	17	5640*	R	S	EM	4	67	....	42	....	6	....	107	46	67	4	4
TR	100	2½	1060	W		EM	3	23½	38¼	30	50	2½	....				2	2
TRH	200	5¼	1640	W		EM	3	31	47½	32	54	2½	....				2	2
TRLE	160	2½	840	W		EM	3	37½	49½	30	50	2½	....				2	2
Barrett RX-24	200	5	1400	RW	St	EM	3	32½	47¼	27½	55½	3½	3	38¼	....	38	4	3
DX-12	200	5	940	R	S	EM	3	24	41½	26¾	43½	3½	3	38	....	48	2	2
SX-24	200	5	1400	R	St	EM	3	32½	47¼	27½	55½	3½	3	38¼	....	38	4	....
TX-12	200	5	910	W		EM	3	24	41½	26¾	50½	3½	3	38	....	48	2	2

For abbreviations and references see page 311

For Directory of the Industrial Truck Manufacturers listed above, see page 263

INDUSTRIAL TRUCKS—TOWING TRACTOR TYPE—*continued*

MAKE AND MODEL	Drawbar Pull (Lbs.)	Trailing Load (Tons)—Dry Level Concrete	Weight—Excluding Battery	OPERATOR: Rides or Walks	OPERATOR: Sits or Stands	Motive Power	3 or 4 Point Suspension	DIMENSIONS (Ins.): Wheelbase	Length—Overall	Width—Overall	Height—To Steering Wheel	Underclearance: At Truck Center	Underclearance: Lowest Point	TURNING RADIUS (Ins.): Outside	Inside	Width of Intersecting Aisle	No. of Forward Speeds	No. of Reverse Speeds
Buda																		
HB-75	7500	.....	12200	R	S	GE	4	72	125½	70½	88	14	.....	104	78	103	4	1
HB-90	9000	.....	13200	R	S	GE	4	72	125½	70½	88	14	.....	104	78	103	4	1
HA-75	7500	.....	12400	R	S	GE	4	72	125½	70½	88	14	.....	104	78	103	4	1
HA-75	7500	.....	12400	R	S	DE	4	72	125½	70½	88	14	.....	104	78	103	4	1
HA-90	9000	.....	13400	R	S	GE	4	72	125½	70½	88	14	.....	104	88	114	4	1
HB-120	12000	.....	15700	R	S	GE	4	72	125½	86	88	14	.....	104	86	114	4	1
HA-120	12000	.....	15600	R	S	GE	4	72	125½	86	88	14	.....	104	86	114	4	1
T6-24	2400	.....	3250	R	S	GE	4	46	81½	42	62	8½	.....	101¼	43½	64½	3	1
TD-24	2400	.....	3350	R	S	DE	4	46	81½	42	62	8½	.....	101¼	43½	64½	3	1
T6-30	3000	.....	4200	R	S	GE	4	46	81½	42	62	8½	.....	101¼	43½	64½	3	1
TD-30	3000	.....	4300	R	S	DE	4	46	81½	42	62	8½	.....	101¼	43½	64½	3	1
JG230	4500	.....	5735	R	S	GE	4	62	102	66	62	9½	.....	110	35	87	4	1
JD230	4500	.....	5880	R	S	DE	4	62	102	66	62	9½	.....	110	35	87	4	1
JG230N	3000	.....	4215	R	S	GE	4	62	102	58	62	9½	.....	110	39	82½	4	1
JD230N	3000	.....	4315	R	S	DE	4	62	102	58	62	9½	.....	110	39	82½	4	1
JG230P	3000	.....	4155	R	S	GE	4	62	102	66	62	9½	.....	110	35	87	4	1
JD230P	3000	.....	4245	R	S	DE	4	62	102	66	62	9½	.....	110	35	87	4	1
JG230WN	4500	.....	6280	R	S	GE	4	62	102	66	62	9½	.....	110	35	87	4	1
JD230WN	4500	.....	6670	R	S	DE	4	62	102	66	62	9½	.....	110	35	87	4	1
JG230WL	6000	.....	6456	R	S	GE	4	86	125	88	68	8	.....	140	63½	98	4	1
JD230WL	6000	.....	6545	R	S	DE	4	86	125	88	68	8	.....	140	63½	98	4	1
JG230PLS	3800	.....	4815	R	S	GE	4	93	142	64	63	8	.....	166	74	103¼	4	1
JD230PLS	3800	.....	4960	R	S	DE	4	93	142	64	63	8	.....	166	74	104½	4	1
JG230PLD	4400	.....	5635	R	S	GE	4	93	154	64	68	8	.....	166	74	104½	4	1
JD230PLD	4400	.....	5700	R	S	DE	4	93	154	64	68	8	.....	166	74	104½	4	1
Clark																		
CKE-6	500	10	1850	RW	.....	GE	3	34	62½	29	54½	6½	2½	80	.....	41½	1	1
CK-20	2000	40	3200	R	.....	GE	4	40	68	39	54½	8½	3½	62	.....	52	3	1
CK-25	2500	52	3400	R	.....	GE	4	40	68	39	54½	8½	3½	62	.....	52	3	1
CT-21	2100	42	3065	R	.....	GE	4	57	94	52	66½	11	5½	108	.....	.....	3	1
CT-30	3000	60	3665	R	.....	GE	4	59	100	52	67	11	5½	118	.....	.....	3	1
CT-40	4000	80	4735	R	.....	GE	4	59	100	66½	67	11	5½	120	.....	.....	3	1
CT-46	4600	92	6200	R	.....	GE	4	59	100	66½	67	11	5½	120	.....	.....	3	1
CT-120	12000	240	15500	R	.....	GE	4	69	122½	92	84	8½	7	127	.....	.....	4	1
Tugger	200	.....	1385	RW	St	EM	3	33½	60¼	32	43	49½	.....	48½	16½	46	.....	.....
Crescent																		
JW-1.5	1500	5	1600	R	S	EM	4	32	66	33	51	6	6	48	.....	46	4	4
JW-2	2000	7½	2500	R	S	EM	4	40	68	40	61½	6	6	70	13	36	4	4
MW-3	3000	10	3200	R	S	EM	4	45	79	42	61½	6	6	80	37	72	4	4
MW-4	4000	14	.....	R	S	EM	4	.....	.....	.....	.....	6	6	.....	.....	.....	4	4
HH																		
CC-47	4000	.....	5000	R	S	GE	4	60	97	60	60	.....	.....	.....	.....	.....	4	1
FC-53	2000	.....	4000	R	S	GE	4	45	80	45	56	.....	.....	.....	.....	.....	4	1
Hyster																		
Tug	540	27½	1100	R	St	GE	3	38	74	42	50	6	6	51	0	55	Var	Var
Kalamazoo																		
3600	1200	20	1650	R	.....	GE	3	51¼	84	42	48	7½	3	71	2½	.....	3	1
Lewis-Shepard																		
JET	600	6	1500	R	S	EM	3	29½	48½	32	51¼	3	3	42½	.....	.....	2	2
E6T	750	7½	1600	RW	St	EM	3	30	44½	32	54	3	3	38½	.....	.....	2	2
Lift Trucks																		
KT	(1)	.....	1200	W	.....	EM	4	24½	42	26½	50¼	2¼	2¼	.....	.....	.....	2	2
KTS	(1)	.....	1150	W	.....	EM	4	19¼	36¼	32¼	50¼	2¼	2¼	.....	.....	.....	2	2
KTRS	(1)	.....	1400	R	.....	EM	4	27½	45	32¼	44	2¼	2¼	.....	.....	.....	2	2
Market Forge																		
ST-1000	1000	10	825	R	S	E-G	3	28¼	48	30	45	5½	1¼	46	3	36	(2)	(2)
UT-1000	1000	10	925	R	St	E-G	.....	36½	58½	30	45	4	1¼	56	6	46	(2)	(2)
Mercury																		
A-440	2200	60	3000	R	S	GE	3	41½	70¼	40	56	10	4	94½	.....	.....	3	1
A-440	2600	65	3000	R	S	GE	3	41½	70¼	40	56	10	4	94½	.....	.....	3	1
A-452	4000	100	4600	R	S	GE	4	60	102	56	66	11	9	120	.....	78	4	1
A-452	5000	125	6000	R	S	GE	4	60	102	67	66	10	9	120	.....	86	4	1
A-460	2400	60	3200	R	S	GE	4	48	78	41	56	7½	4	82	.....	.....	3	1
A-460	3000	75	4000	R	S	GE	4	48	78	41	56	7½	4	82	.....	.....	3	1
A-550	2500	60	2900	R	S	EM	4	45	78	41	64	8½	4	88	.....	64	4	4
A-560	1000	25	1350	R	S	EM	3	41	70	34	61½	8	3½	80½	.....	56	3	3
A-600	5500	135	5400	R	S	EM	4	60	94	44	66½	8	4	100	.....	.....	4	4
A-750	3000	75	3300	R	S	EM	3	48	86½	42	52	5	5	72	.....	.....	4	4
Payloader																		
TC-60	6000	150	7900	R	S	GE	3	70	116	66	52½	6½	6½	121	34	92	2	2
TU-80	8000	200	11000	R	S	GD	3	79	143	80	61	14	12	238	122	112	4	4
TM	16000	400	25000	R	S	GD	3	86	182	96	80	22	16	294	148	.....	4	4
Revolvator																		
82130	700	Var	1450	W	.....	EM	4	Var	Var	32	90	.....	3½	.....	.....	Var	2	2
Towmotor																		
KS-30	3000	73	3800	R	S	GE	4	36½	67†	40½	54	8	3½	64	9½	56	2	2
KS-33	3300	80	3990	R	S	GE	4	36½	67†	40½	54	8	3½	64	9½	56	2	2
KS-36	3600	88	4260	R	S	GE	4	36½	67†	40½	54	8	3½	64	9½	56	2	2
KS-40	4000	98	4600	R	S	GE	4	36½	67†	40½	54	8	3½	64	9½	56	2	2
Yale & Towne																		
K24JS	3000	.....	3100	R	S	E-G	4	39½	67	39½	.....	8½	.....	78	.....	57	4	4
K24DT	2000	.....	2650	R	S	E-G	4	42½	72	40½	60	8½	.....	61½	.....	55	4	4
MT	(3)	4	1470	W	.....	E-G	3	26	48½	32¼	.....	2¼	2¼	43¼	.....	48½	2	2
M5GT	(3)	4	990	W	.....	EM	2	42¼	67½	31	.....	1¼	1¼	.....	.....	.....	2	2

ABBREVIATIONS

*—Including battery.
†—Not including towing eyes.
(1)—200 to 500.
(2)—Two standard; three optional.
(3)—200 to 700.
DE—Diesel engine.
E-G—Electric or gas-electric.
EM—Electric motor.
GD—Gasoline or diesel engine.
GE—Gasoline engine.
R—Rides.
RW—Rides or walks.
S—Sits.
St—Stands.
Var—Variable.
W—Walks.

For Directory of the Industrial Truck Manufacturers listed above, see page 263



10 trucks replace 30 – cut costs 62%

WHEN 10 50-ton trucks equipped with Allison TORQMATIC DRIVES replaced 30 mechanical-drive 20- and 30-ton trucks at Sunnyhill Coal Company's New Lexington mine:

Operating costs dropped *18.6¢ per ton,*

Maintenance costs were cut *13.1¢ per ton,*

And the TORQMATIC*-equipped trucks now haul 32.6* more *tons per truck hour.*

But lower costs are only part of the story.

On-the-job accidents have dropped sharply. Drivers stay fresher, more alert because they now have no clutch pedal to push – quick-shift at full throttle with finger-tip hydraulic control—have only 3 shifts instead of 7 or 10.

Wet weather worries have almost disappeared—road maintenance costs are lower. Smooth power transmission by the Allison TORQMATIC DRIVES lets trucks drive through mud and muck—conditions that often shut down the mine before TORQMATIC-equipped units came on the job.

Big reason for lower operating and maintenance costs is shock-free power transmission by the *matched* TORQMATIC Converter-Transmission teams. The Converter absorbs shock loads instead of transmitting them along the drive line—protects engine, differential, drive shaft and transmission from damage.

There's an Allison TORQMATIC DRIVE for your 40- to 400-horsepower gasoline and Diesel equipment. New low-cost 40-150 h.p. TORQMATIC Converters easily fit present equipment, are completely self-contained for simple installation. Get full details about Allison TORQMATIC DRIVES from your equipment manufacturer or dealer or write:

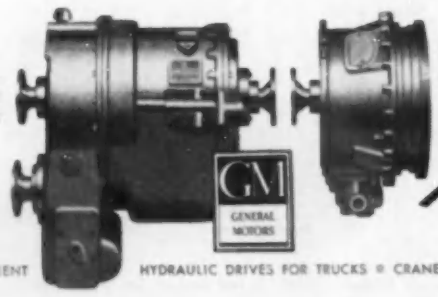
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Unbeatable Team for Maximum Operating Economy

- **Quick-Shifts** at full throttle with finger-tip hydraulic control
- **Holds** power to load at all times – no clutch pedal to push—no gearshift guess
- **Reduces** maintenance costs by absorbing shock – eliminates engine lugging – prolongs equipment life
- **First** torque converter-transmission team designed to work as a *unit* and built by one manufacturer
- **Cuts** driver training costs

FIRST MATCHED UNITS BUILT BY ONE MANUFACTURER



Allison
TORQMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR TRUCKS • CRANES • TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS



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DETROIT 16	1549 Temple Avenue
GRAND RAPIDS	113 Michigan Street, N.W.
INDIANAPOLIS 4	5 West 10th Street
LONG ISLAND CITY 1,	47-28 37th Street
LOS ANGELES 54	Ducommun Metals & Supply Co., 4890 South Alameda
MILWAUKEE 2	111 E. Wisconsin Avenue
PHILADELPHIA 40	511 W. Courtland Street
ROCHESTER 6	33 Rutter Street
ST. LOUIS 8	3740 Washington Blvd.
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One of the main reasons for Danly's faster die set service is the *interchangeability* of die set parts achieved by Danly. It starts at the main Danly Plant where die set components are produced to Danly's traditional high quality, precision standards. The faster service cycle continues at all of the Danly Branch Plants where thousands of *interchangeable* die set components are stocked. The cycle is completed at the Danly Branch in your area where these parts are assembled as a die set to meet your specific requirements and shipped as soon as your order is received. So remember—for the best in die sets in the shortest time, the place to call is your local Danly Branch.

DANLY

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MALLORY

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A Mallory standard holder can probably do exactly the job you need. This diversified line offers you the variety of custom-fitted designs with the economy and ready availability of standard stock items. Included are offset, paddle type, low inertia, straight, swivel head, universal and close-coupled types . . . in a wide range of sizes and in light, standard and heavy duty pressure ratings.

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STOCK ELECTRODES

Hundreds of shapes and sizes are available in stock . . . with round water holes or the exclusive Mallory fluted cooling hole for longer life between dressings. Save you both cost and delivery time.

STANDARD ELECTRODES

Odd-shaped electrodes you consider "specials" may well be standard items for Mallory . . . can be made quickly with existing tools, in a wide range of single-bend, double-bend and irregular shapes.



For information on titanium developments, contact Mallory-Sharon Titanium Corp., Niles, Ohio

Keller Multiple Nut Setters

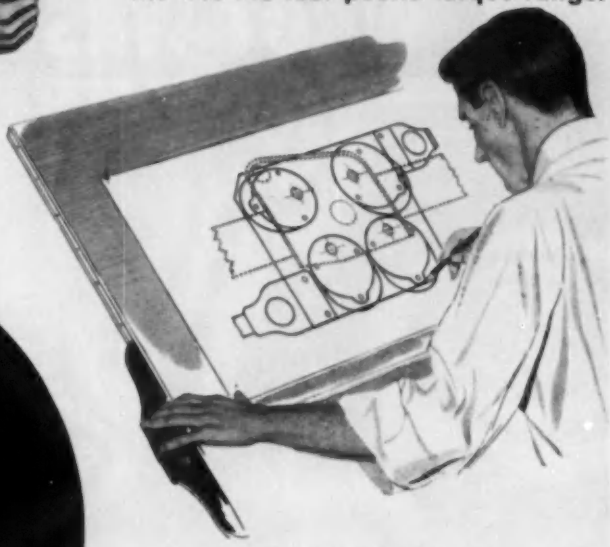


achieve

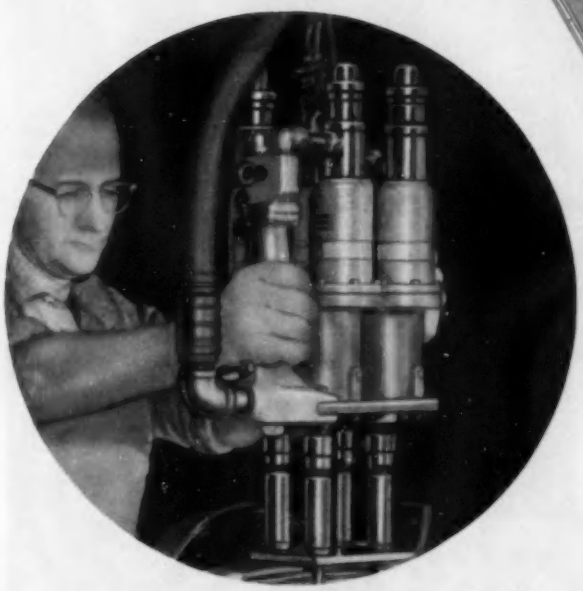
ACCURATE TORQUE CONTROL and FAST RUN-DOWN

on multiple nut setting operations in the 4 to 140 foot-pound torque range.

From the bolt pattern on your own blueprint



. . . a tool design that meets your needs



. . . and a complete Multiple Nut Setter built up with standard unit assemblies

Do you have a nut setting problem involving a reduction in time or the maintenance of accurate torque control in setting two or more nuts? Then let our field engineer show you how Keller Multiple Nut Setters can solve this type of problem.

On your own blueprint of the job, he will lay out the complete tool—showing size and location of motor units and handles, and an outline of the mounting plate.

From this layout, Keller builds up the complete Multiple Nut Setter from standard units (only the mounting plate is special). You have a tool engineered to your specific job—with economies gained from standard unit construction.

For catalog information, ask for Bulletin No. 12.

GARDNER-DENVER Since 1859 K KELLER TOOLS

KELLER TOOL

DIVISION OF **GARDNER-DENVER**

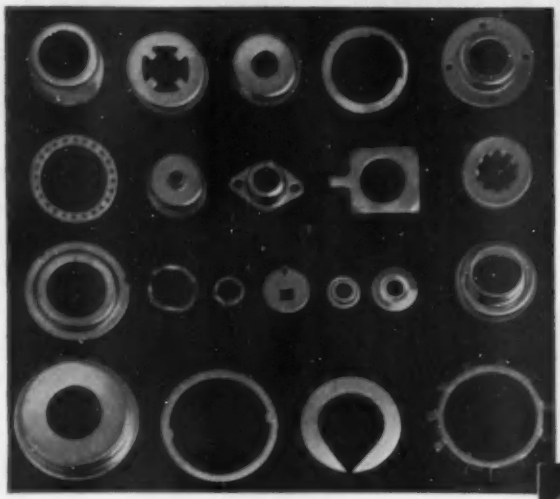


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GRAND HAVEN, MICHIGAN

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MILWAUKEE WROT WASHERS

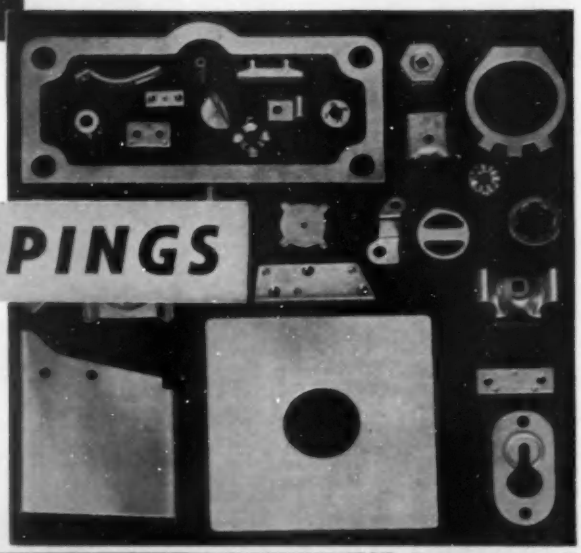
SINCE 1887



In terms of "satisfaction to the customer" the dominant leadership of Wrought Washer Mfg. Company in this specialized field represents not only a thoroughly dependable source of supply to meet all your requirements for Standard and Special Washers, but of equal importance, it carries with it a wealth of technical know-how dealing with a wide variety of production and design problems . . . available to you as a gratis service. More than 25,000 sets of dies "in stock" at our plant offer the greatest range of selectivity.

Our equipment for handling contract production of stampings includes presses for blanking, forming, drawing, shearing and extruding. In many cases it is possible to produce stampings at a lower cost than they can be produced in your own plant, with our own equipment. Our own tool and die-making shop enables us to make up the necessary tools to fit your specifications.

STAMPINGS



We are equipped to furnish stampings in any desired materials and finishes, ranging in size from small parts to large heavy-gauge pieces. Our engineering staff will be glad to co-operate with you in every way consistent with economical and efficient production.

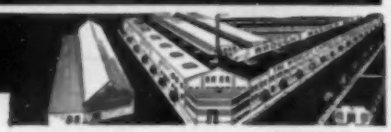
• • •

Send us your blueprints for quotations on special washers and stampings made to your individual specifications. Write for copy of 76-page Catalog "30" with tool list and complete round washer specifications.

WROUGHT WASHER MFG. CO.

THE WORLD'S LARGEST PRODUCER OF WASHERS

2212 SOUTH BAY STREET • MILWAUKEE 7, WISCONSIN



A8247-IP

New Machine *Shaves* INTERNAL GEARS *Faster* and to *Closer* TOLERANCES



This new Red Ring Model "GCR" is a high production, high precision shaving machine for a broad range of internal gears. It provides two methods of shaving and many advantages which heretofore were available only on external gear shaving machines.



- It will precision shave all spur or helical internals 3" to 12" PD, up to 4 diametral pitch with face widths to 2½".
- It will operate on an automatic and selective feed cycle.
- It provides the opportunity to use a new, rapid PLUNGE-CUT shaving cycle in addition to conventional shaving.
- Crowning by the Plunge-cut method is optional.
- It will taper-shave gear teeth.
- It assures precision comparable to that established by Red Ring Machines for external gears.
- It reduces loading and unloading time to a minimum.
- It handles gears having integral shafts.

When using the automatic feed cycle a selected number of cutting strokes, each with its own selected increment of up-feed, can be combined with whatever idling strokes are desired. At the end of the cycle the machine automatically stops in the proper backlash position for rapid unloading.

If your manufacturing program includes internal gears, write for complete information on this new shaving machine.



NATIONAL BROACH & MACHINE CO.

5600 ST. JEAN . . . . . DETROIT 13, MICHIGAN

WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

7112

COMPLETE *Finishing* SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH



. . . the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

See Sweet's Plant Engineering File for information, or write for Catalog A-655.

. . . more Metal Products are Painted in Complete Mahon Finishing Systems than all other Types combined.

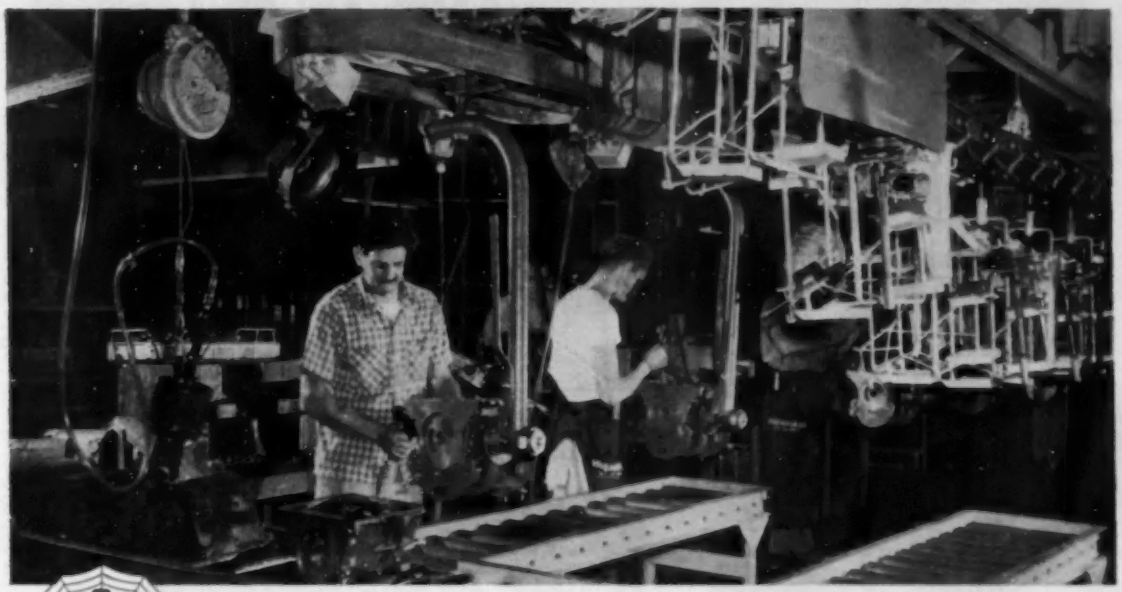
THE R. C. MAHON COMPANY • Detroit 34, Michigan

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning and Rust Proofing Equipment, Metal Cleaning and Pickling Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems and Drying and Baking Ovens, Cooling Tunnels, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other Units of Special Production Equipment.

MAHON

JERVIS B. WEBB

CONVEYOR ENGINEERING, MANUFACTURE, INSTALLATION and AUTOMATION



POWER and FREE CONVEYORS PROVIDE *Flexibility* for Assembly, Testing, Live Storage

This Webb "Power and Free" conveyor system, in the automatic transmission plant of one of the "Big Three" automobile manufacturers, is a prime example of accomplishment in efficiency, reduction of production costs and elimination of manual materials handling.

Starting in the sub-assembly area, a Webb overhead trolley conveyor carries parts to the final assembly department (shown above) where two "Power and Free" conveyors take over and carry the transmissions through every assembly operation. After assembly is completed, another "Power and Free" conveyor provides live overhead storage for the transmissions until they can be taken by conveyor to the test stand area.

In a similar manner, all fifteen "Power and Free" conveyors, located throughout the plant, are synchronized into an automatic system that is thousands of feet long. From the receiving of transmission parts, through final assembly, several live storage areas, testing, and delivery to shipping, the transmissions never leave the Webb "Power and Free" Conveyors.

With Webb "Power and Free" conveyor systems, the power is transmitted from pushers on the power trolleys to the free trolleys which carry the load. When power is not required at specified storage or stationary assembly locations, the power line is raised to disengage the free trolleys. An ever increasing number of manufacturers are finding this system an ideal solution to their production requirements for a conveyor that provides a combination of automatic handling, stationary assembly facilities and live overhead storage.

Write to us on your company letterhead and we will be happy to place your name on the Webb mailing list to receive factual technical information on conveyor installations, case history reports, and new product literature.

JERVIS B. WEBB CO.

Specialists in Custom Conveyor Systems

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4281

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THE ENGINE LATHE uses a single-point tool restricted to chip-producing operations on the exterior surface of a rotating workpiece.



THE DRILL PRESS uses a revolving tool restricted to chip-producing operations penetrating into a fixed workpiece.

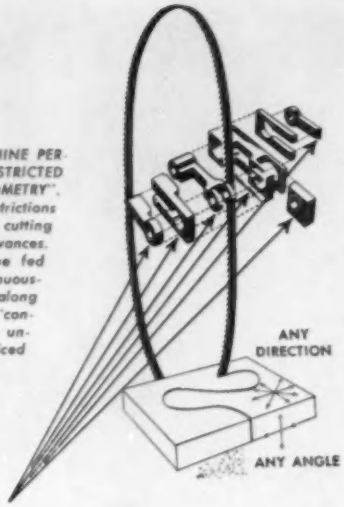


THE MILLING MACHINE uses a rotating cutter held in fixed position restricted to chip-producing cutting operations as workpiece advances.

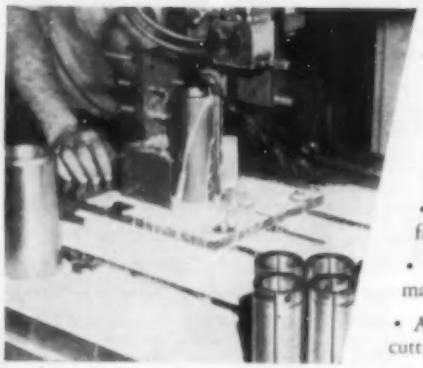


THE PLANER employs a single-point tool restricted to chip-producing, straight-line cutting on a plane surface as workpiece advances.

THE BAND MACHINE PERMITS "NON-RESTRICTED MACHINING GEOMETRY". There are no restrictions to the direction of cutting action as the cut advances. Hence, work may be fed to the narrow, continuous-cutting band tool along either a straight or "contoured" course. And unwanted material is "sliced off" in whole sections.



How the "non-restricted Geometry" of band machining can cut your costs!



Slotting operation on production parts being performed on DoALL Band Machine at half the cost of milling, the previous method used.

WITH modern DoALL Band Machines you can cut costs of slotting, splitting, cutting contours, cutting parts from the solid, notching and many other operations—on a high production basis. Here is why:

- The thin blade "slices" through metal, removing an entire section intact instead of whittling it down to a pile of chips.
- Any internal or external shape or contour can be cut.
- Straight cuts can be made accurately at any angle to the face of the workpiece.
- Work is mounted on a tiltable table which feeds automatically by hydraulic power.
- An integral recirculating coolant system promotes high cutting rates and good finishes.
- Infinitely variable feeds and speeds provide optimum results.
- There is a cutting tool for every job and every material including new DoALL Demon high-speed steel band tools that cut up to 6 times faster and last up to 10 times longer than any previous saw band.

DoALL

NEW COLOR FILM: "Production Band Machining" now available showing operation of this new machining concept.

FREE DEMONSTRATION: call your local DoALL Store (see classified directory), or write: The DoALL Company, Des Plaines, Ill.

PB-8 rev.



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EDUCATIONAL STUDY WALL CHARTS

Economic Principles

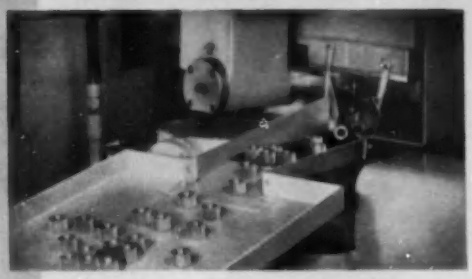
$1.00 each postpaid

Lower quantity prices.

GEAR & SPLINE PRODUCERS:

new methods *cut costs* for YOU





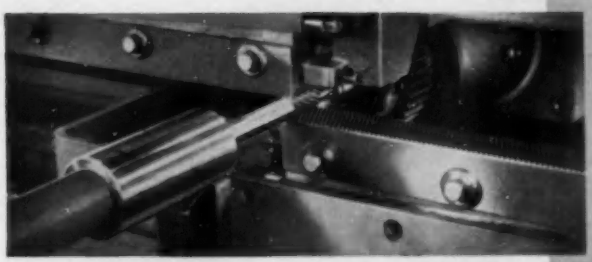




Automation of gear production is here. Standard Michigan gear hobbers, gear shavers, and gear speeders can now be equipped with hopper feed. Gravity or belt conveyors carry the gears from one operation to the next. Automatic centers load and unload the work without human assistance.

The old bugaboo of scrap gears is being dealt with by gaging all gears automatically with the Michigan gear gaging system as they are produced. Oversize, undersize or off-lead gears are shunted aside. Gear production machines can be either shut down for adjustment or automatically adjusted for correct center distance when as few as two consecutive scrap gears are produced. Automation speeds up sound testing on Michigan gear speeders to assure quiet gears. All this cuts scrap loss, increases production, prevents tie-ups, and cuts manpower requirements.

Write for information on these cost cutting methods.



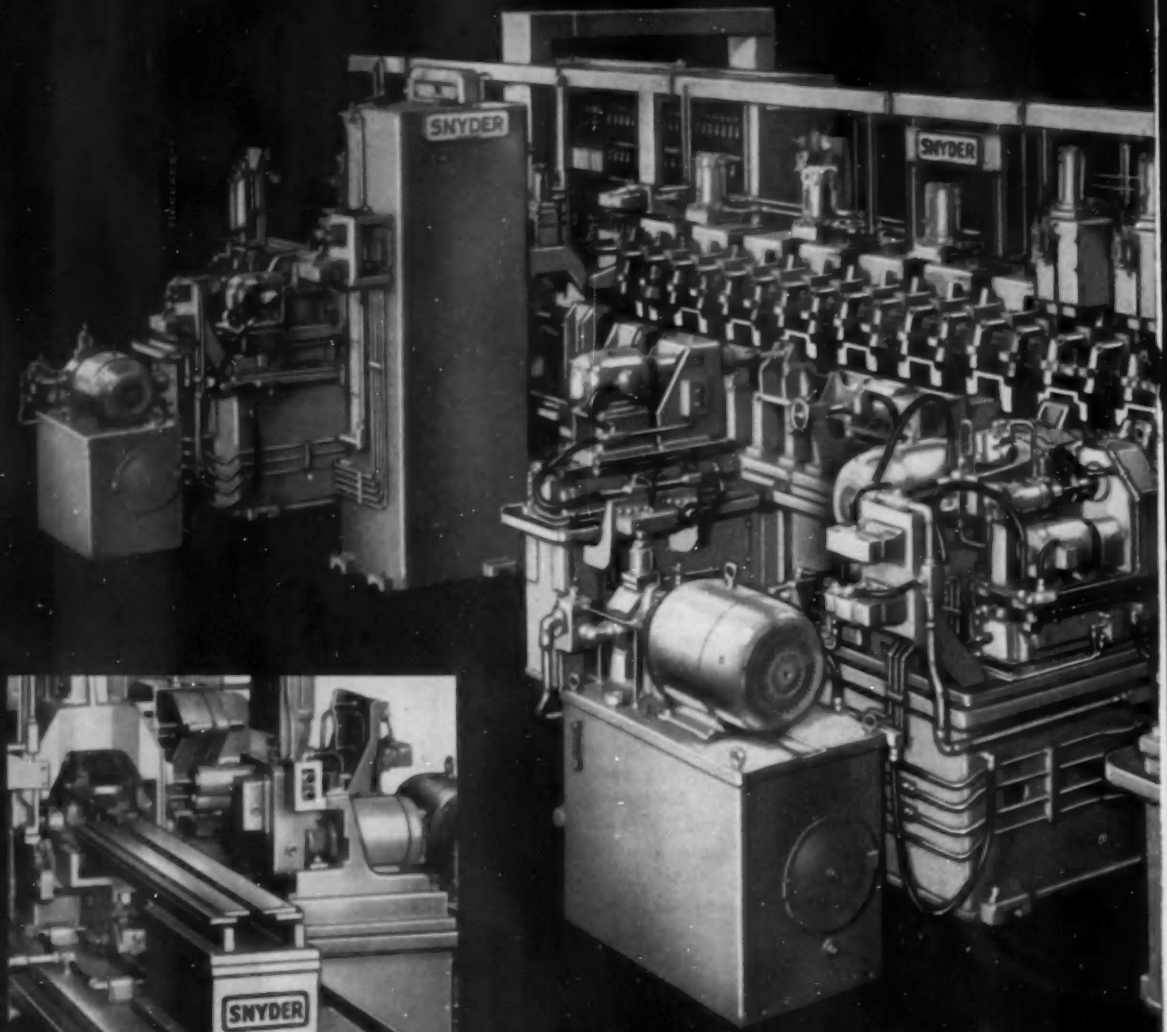
*Patent Pending

Splines can now be formed automatically up to thirty times faster by Michigan's *ROTO-FLO spline roller. Superior quality helical or straight splines can be produced at a significantly lower cost. Ask for bulletin RF-54.

MICHIGAN TOOL Company

from blank to finished gear

7171 E. McNICHOLS RD. • DETROIT 12, MICHIGAN, U. S. A.



This is the discharge end of the machine. The part, which is originally in vertical position, is laid horizontally and swung 90° to expose all sides to the tools.

SNYDER SPECIAL automatic

24-station transfer machine for processing automotive water pump housings; drills, mills, faces, chamfers, taps all holes and probes tap drill holes. Production, 81 pieces an hour at 80% efficiency.



72152
53-46



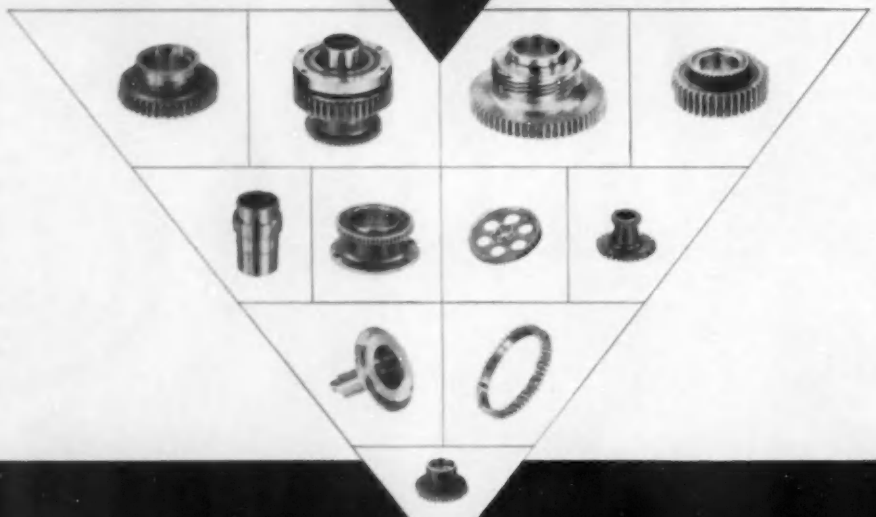
SNYDER

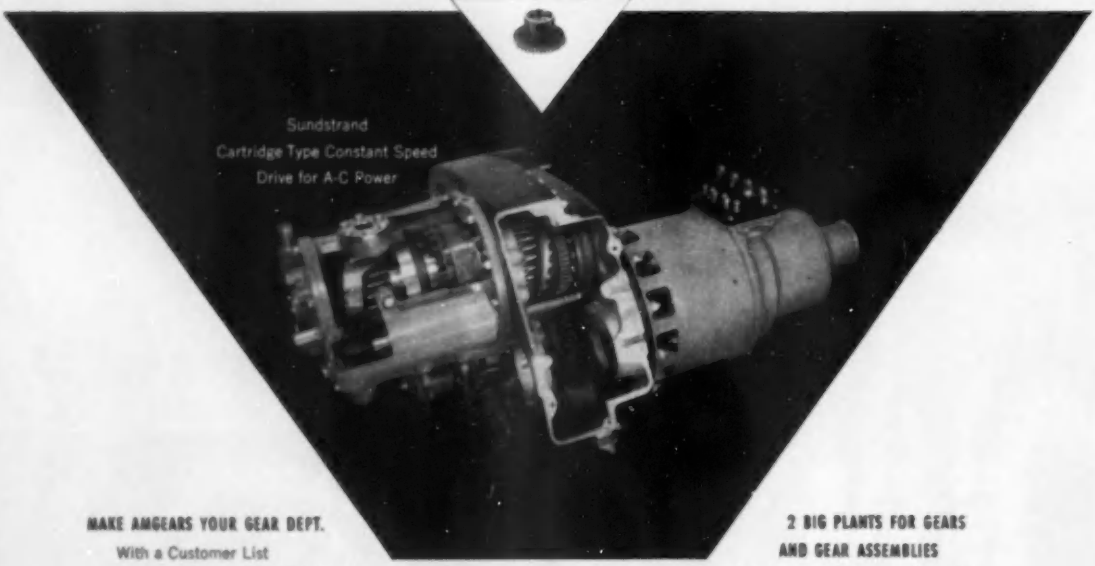
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Special reading about castings with special properties!



Now . . . the latest casting information! Campbell, Wyant and Cannon's new booklet, "One Source," is filled with interesting data on many types of castings. The section on castings with special properties, for example, tells how CWC's constant research and advanced engineering give life to new and better alloys that assure increased strength and greater resistance to wear, heat and corrosion. "One Source" also deals with the subjects listed below . . . and there are photographs of the broad range of castings made by CWC. It's a booklet that everyone interested in castings—either directly or indirectly—should read. Send for your free copy today!

Whatever Your Requirements

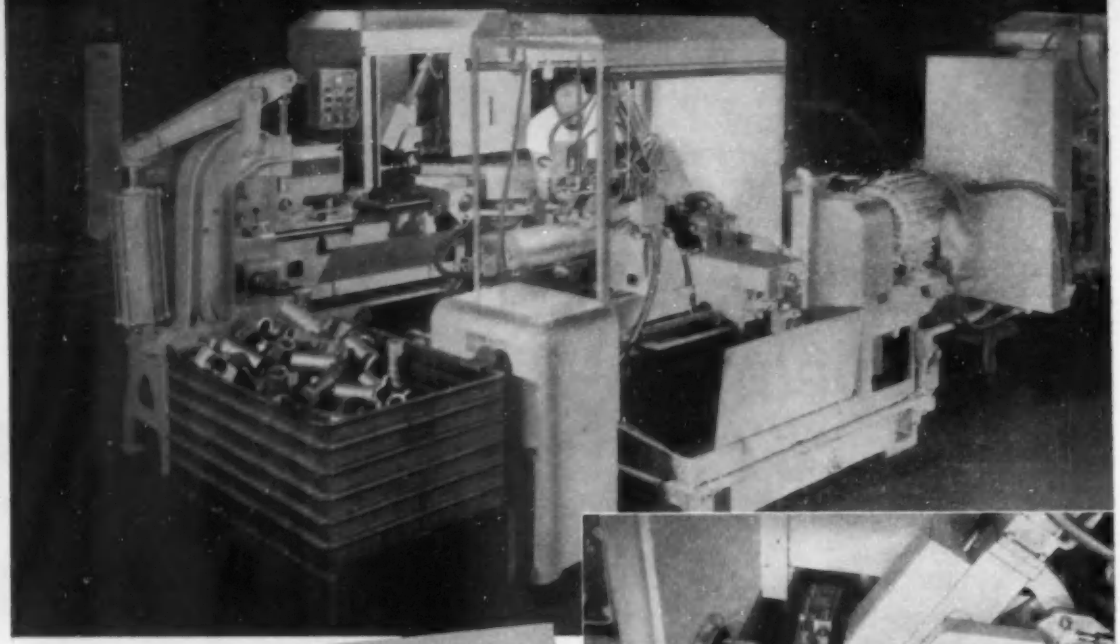
GO TO ONE SOURCE

CWC

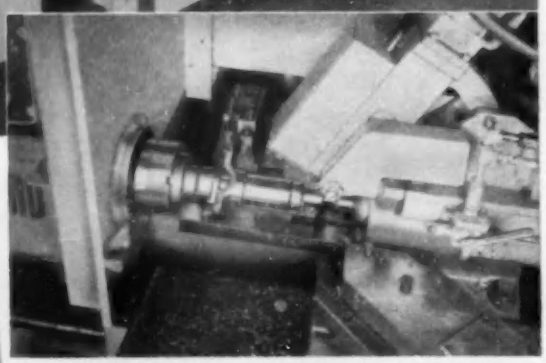
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GRAY IRON, ALLOY IRON AND STEEL CASTINGS

Intricate Castings.
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Heat-Treated Castings.
Steel Castings.
Centrifugal Castings.
Castings in Limited Quantities.
Castings in Volume.

Turning Time Cut From 4 1/2 to 2 Minutes Per Piece



With a SUNDSTRAND Automatic Lathe Equipped With Automatic Multi-Cycle Tracer Control



Two Sundstrand Automatic Lathes with automatic multi-cycle tracer control for machining Universal Joint parts. Inset: Close-up of tracer control.

Various sizes and types of Universal Joint parts are turned on these Sundstrand Automatic Lathes equipped with Automatic Multi-Cycle tracer control. On one lot of parts, machining time was cut from 4-1/2 to 2 minutes per part. Savings on other sizes of parts are comparable.

The lathe is also equipped with adjustable facing attachment for chamfering or undercutting. These high producing Sundstrand Automatic Lathes are easily changed over for handling the various sizes of parts.

SUNDSTRAND

"Engineered Production" Service®

®REG. U.S. PAT. OFF.

AUTOMATIC LATHES | SIMPLEX RIGIDMILS | DUPLEX RIGIDMILS









Unit Produces Ruff, Semi-Finish and Finish Cuts In One Automatic Cycle

With this attachment and controls, ruff, semi-finish and finish cuts can be taken with one turning tool in one automatic cycle. The control can be set up for one, two or three cycles depending on stock removal and job requirements. The regular cross feeding rear slide can be used to square up shoulders, chamfer, etc. Cycle changing is quick and easy, usually 15 minutes or less, with actual time dependent on the number of facing tools required in the job set-up. Illustrated above are typical parts turned at Mechanics Universal Joint Division, Borg Warner Corp., Rockford, Illinois, using Sundstrand Automatic Lathes equipped with the new Sundstrand Multi-Cycle Tracer Control. The Universal Joint parts illustrated are just a few of many that can be turned efficiently on this equipment. The diameters and tapers are turned with simple single point tools. Small lots or large can be handled easily and quickly.

features

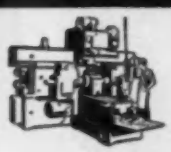
1. Easily changed over for different jobs.
2. One template for all three cuts.
3. Change-over time to standard operation approximately 45 minutes.
4. Three turning cuts in one automatic cycle.
5. Cross feeding rear slide operates in automatic cycle for facing, grooving, chamfering, etc.
6. Because of the complete automatic cycle, one operator can run several machines.

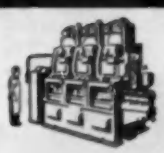
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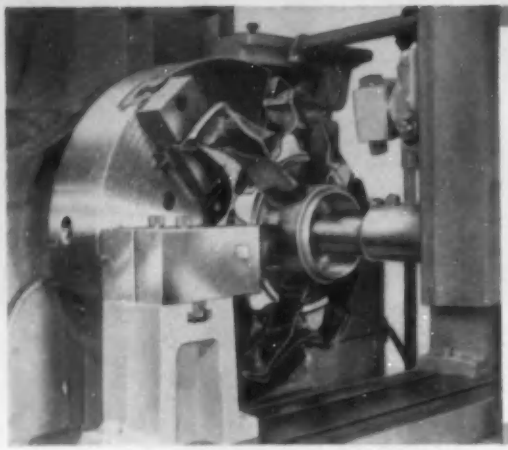
TRIPLEX RIGIDMILS | SPECIAL MACHINES

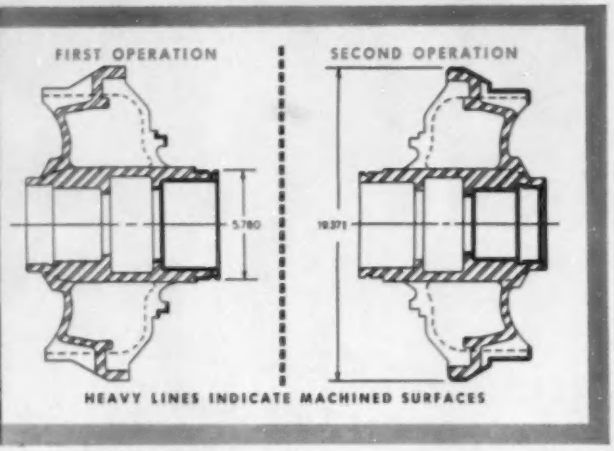




SUNDSTRAND
Machine Tool Co.
2571 Eleventh St. • Rockford, Ill., U.S.A.

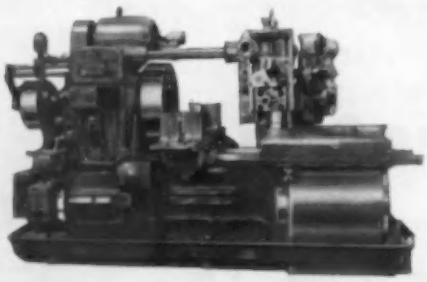
BIG TRUCK WHEELS ARE TURNED *FAST*





BY THE POTTER & JOHNSTON 6-DRE *Automatic Turret Lathe*

Tooling to machine this cast steel truck wheel, P&J Engineers used pilot bars engaging a bushing in the main spindle center for extra boring tool support. In addition the massive turret slide and the overhead pilot construction of the Model 6-DRE gave ample turning tool rigidity. Four automatic speed changes and three automatic feed changes were selected to provide the most effective cutting speeds. Cross slide tools permitted multiple machining for further time savings. In the second operation, piece clamping was by air operated fingers located between the spokes, pulling the work against a ground positioning plate. Here, positioning accuracy, equalized clamping pressure and fast action contributed greatly to close tolerance, high performance work.



Over 50 years of production know-how went into the high quality and economy of automatic operation in this typical example—one more tribute to the versatility and capacity of P&J automatic chucking and turning machines. Bulletin 128, detailing the Model 6-D machine, yours for the asking.





WRITE DIRECT OR CONTACT YOUR NEAREST PRATT & WHITNEY BRANCH OFFICE

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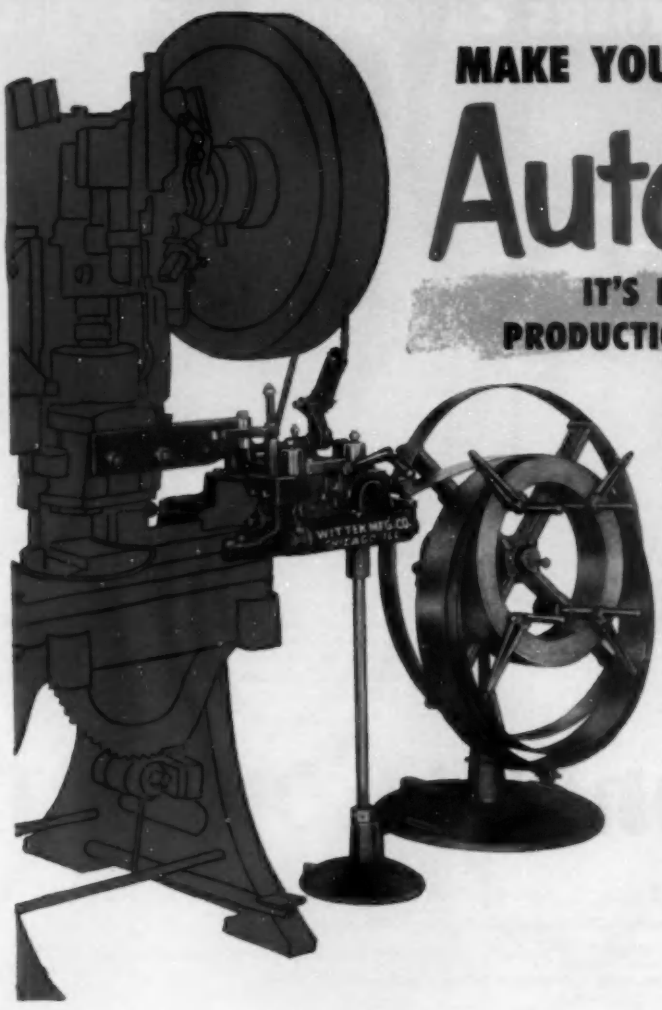
AGENTS: DALLAS—THE STANCO CO. BOSTON, WESSENDORFF, NELMES & CO.

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PRECISION PRODUCTION TOOLING — FOR OVER FIFTY YEARS

MAKE YOUR PUNCH PRESSES Automatic

IT'S EASY WITH WITTEK PRODUCTION FEEDING EQUIPMENT



Roll Feeds and Reel Stands

Wittek automatic roll feeds assure an accurate feed (push or pull) of coiled material to any size or make of punch press. Standard units are available in a wide variety of models to fit all requirements. Simple adjustments permit quick change from one job to another.

Several sizes of Wittek reel stands accommodate a range of coil weights up to 800 pounds—with widths up to 12 inches. They facilitate the handling of coiled strip or wire for automatic feeding. Each reel can be adjusted to any angle and height.

Power-Driven Stock Straighteners

The Wittek stock straightener is a self-contained motor-driven unit for continuous straightening of coiled stock. It is used in conjunction with a reel stand and automatic feed for punch presses. An infinitely variable speed drive permits any desired straightening speed. The maximum width of stock handled on standard models is 12 inches.



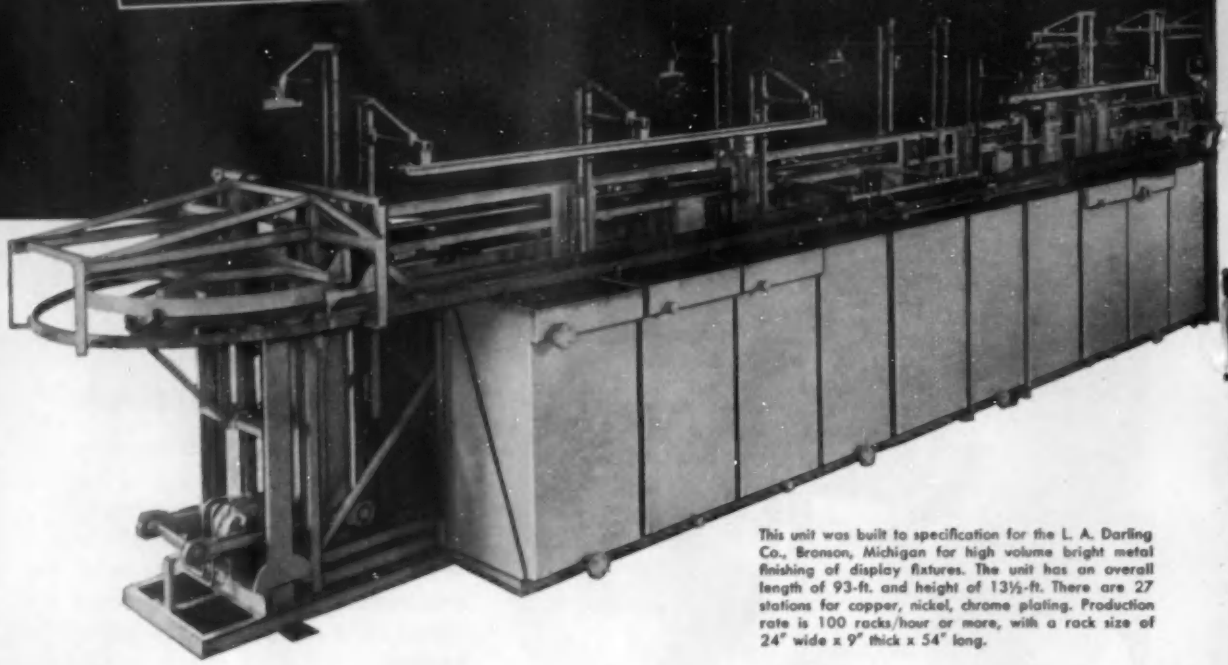
Write for recommendations on Roll Feeds, Reel Stands, and Stock Straighteners to meet your requirements.

Production Feeding Equipment

WITTEK MANUFACTURING COMPANY

4319 West 24th Place • Chicago 23, Illinois

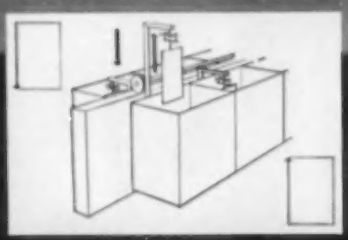
ONLY Wagner BROTHERS CAN OFFER YOU THIS . .



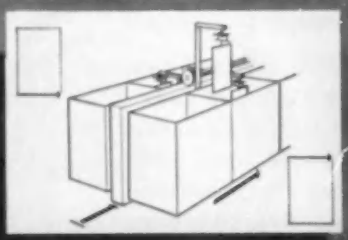
This unit was built to specification for the L. A. Darling Co., Bronson, Michigan for high volume bright metal finishing of display fixtures. The unit has an overall length of 93-ft. and height of 13½-ft. There are 27 stations for copper, nickel, chrome plating. Production rate is 100 racks/hour or more, with a rack size of 24" wide x 9" thick x 54" long.

Revolutionary Concept.....

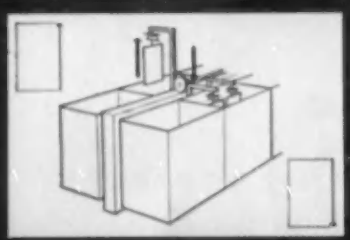
The Wagner Brothers Automatic is a complete and fully automatic mechanism, incorporating a revolutionary vertical transfer and return type work conveying principle which eliminates elevating superstructure, transfer cams, chains and sprockets and hydraulic cylinders above tanks. Many unique design features combine to make this mechanism a smooth operating, perfectly timed unit requiring less than ½ the power of comparably sized units.



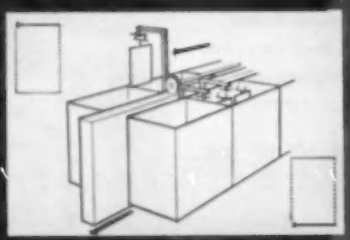
FIRST VERTICAL MOTION



FIRST HORIZONTAL MOTION



SECOND VERTICAL MOTION

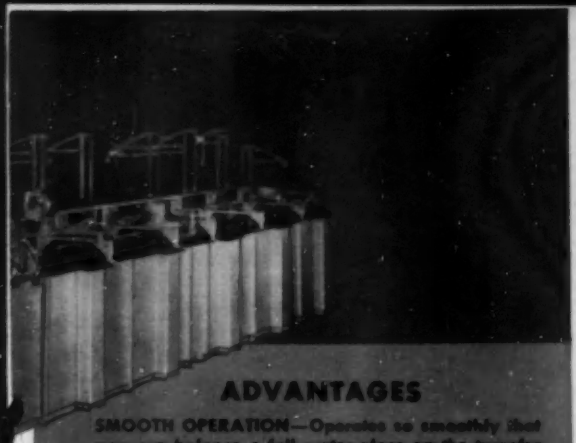


SECOND HORIZONTAL MOTION

HOW IT WORKS

All transfer and conveying mechanism is mounted on a reciprocating carriage located between the two rows of tanks. Two basic movements are used to bring parts through the full plating cycle; one forward and reverse straight line horizontal motion and one raising and lowering vertical movement.

Plating racks are attached to work-carriers at the loading station. When the machine is started, lifting arms fixed to the carriage engage the work-carriers being transferred and lift them at all transfer points on one side of the machine, carry them forward to the next station where they are lowered and disengaged from the lifting arm. This sequence is simultaneously produced in reverse on the opposite side so that, when the lifting arms are being lowered on one side, they are raised on the other side.



ADVANTAGES

SMOOTH OPERATION—Operates so smoothly that you can balance a full water glass on the transfer mechanism throughout the entire plating cycle. Obviously such smooth operation will save you time now spent salvaging parts from tanks, dropped there because of the jolting transfer action of ordinary machines.

LOW POWER REQUIREMENTS—Powered by one 10 hp motor, this installation uses less than half the power required by comparably-sized units.

MINIMUM OF MAINTENANCE—There are few moving parts to wear, no vibrating parts, no backlash in automation, and little chance of misalignment. Overload protection is given by a by-pass in the hydraulic pump which prevents destructive jamming. All working parts can be reached for adjustment without disassembly. Maintenance is reduced to a fraction of that usually required.

..... IN PLATING AUTOMATION

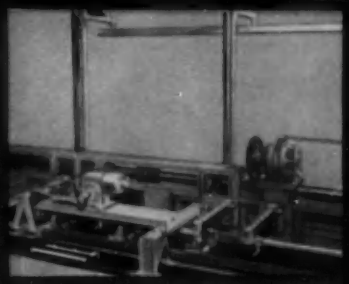
SIMPLE INSTALLATION—Your Wagner Brothers Automatic is delivered to you, either intact or in two or three completely assembled sections, depending upon size. Installation is simply a matter of positioning and leveling. You can imagine the savings in installation costs ordinarily required.

OTHER PLUS FEATURES—Wagner Brothers Automatics require a minimum of space. The model illustrated uses 54-inch racks and operates under a 13½-ft. ceiling. There are no greased parts or hydraulic fittings over tanks where dripping oil could contaminate solutions. Triple contacts on cathode bars afford consistent, uninterrupted current flow. Automatic heat control system gives simple, foolproof regulation of temperature for accurate results. Centralized lubrication can be provided as an optional feature. Drag and dwell times are easily varied with this unit.

In addition to high-volume plating, the Wagner Brothers' Automatic is equally well-suited to anodizing (sulphuric and chromic), phosphate coating, etching, electropolishing, oxide coating.

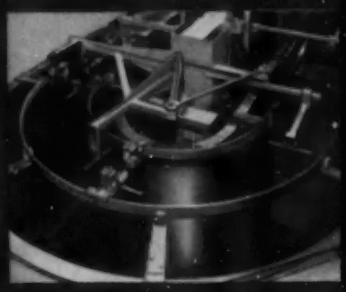
AGITATOR MECHANISM

Operating independently of the plating machine, a speed reducer furnishes agitation for the nickel plating tank at the rate of 10 to 14 ft./min., with a 3-inch stroke.



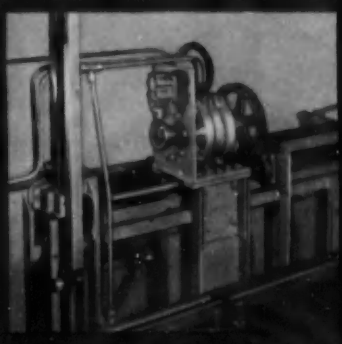
END TANK PUSHER ARM ASSEMBLY

Work-carriers, sliding on two electrified rails, are pushed around the end tank by a circular pushing arm and linkage arrangement to a point where they are again engaged by the lifting arms of the carriage to complete the plating cycle.



HYDROMOTORS FOR VERTICAL MOTION

Vertical motions are imparted to the work lifting arms by the two hydromotors mounted on the carriage, connected by rack and pinion gearing by a shaft running the length of the machine. Timing is effectively controlled by the eccentric arrangement on the one hydromotor, causing the arms on one side of the machine to rise while those on the other side are lowered.



HYDROMOTOR FOR HORIZONTAL MOTION

The transfer carriage, suspended on rollers moving over an oil-filled channel track, is actuated by this single hydromotor mounted at the base of the machine. Fitted with a crank and link, the hydromotor translates the simple harmonic motion of the motor shaft to the in-line reciprocating motion of the carriage. Note the convenient, easily accessible grouping of limit switches on the frame. Only four are required for the entire machine.



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☐ Please send information describing Wagner Brothers Automatics ☐ Please send name of representative

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Designed for in-line installation at extremely high flow rates—25 to 800 GPM. Features low pressure drop—only 4 PSI across unit at 170 SUS. Uses new "FLO-PAC" pleated paper cartridge, removes particles down to one micron.



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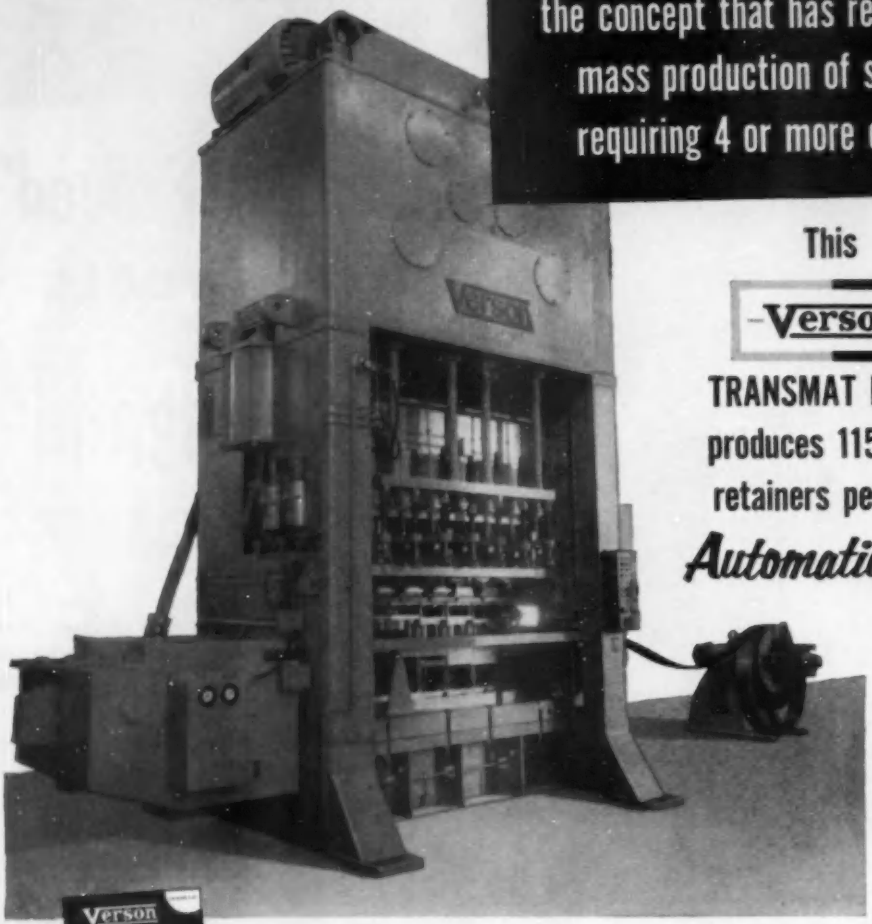
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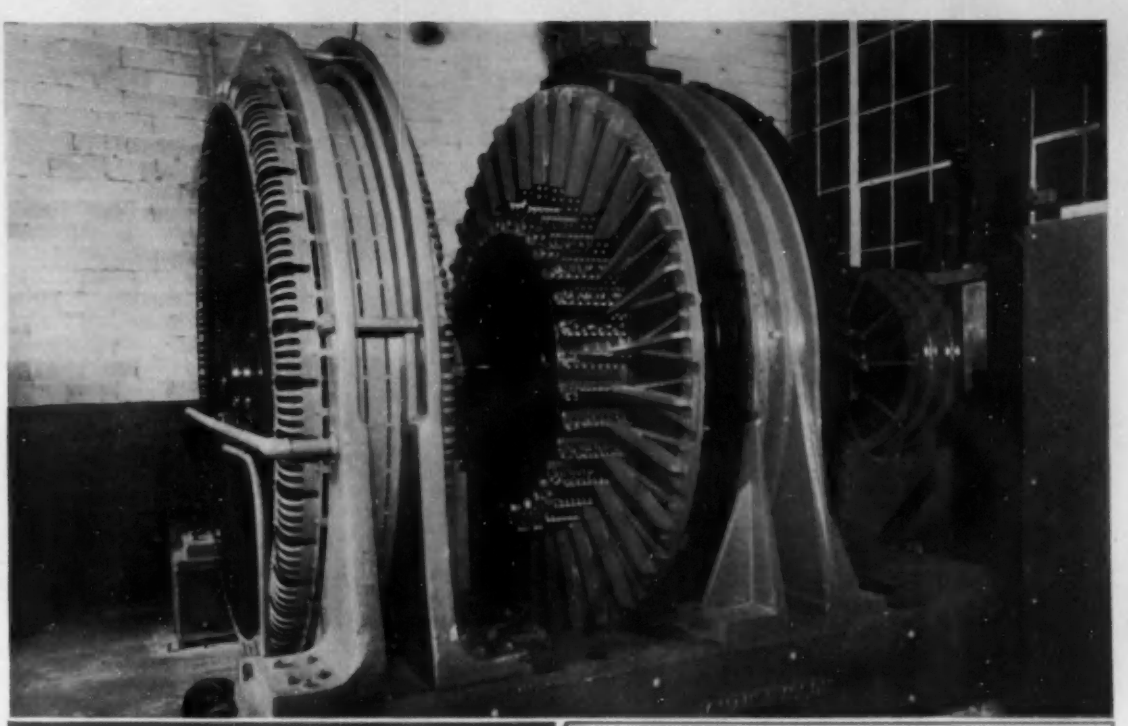
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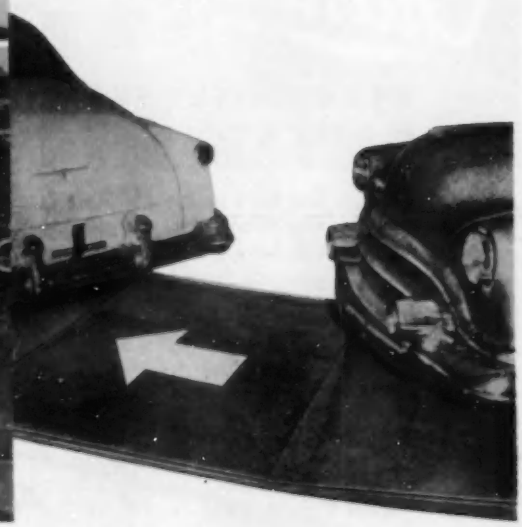
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BELOW: *Continuous pallet type production or transportation conveyor which can incorporate turns in either direction.*

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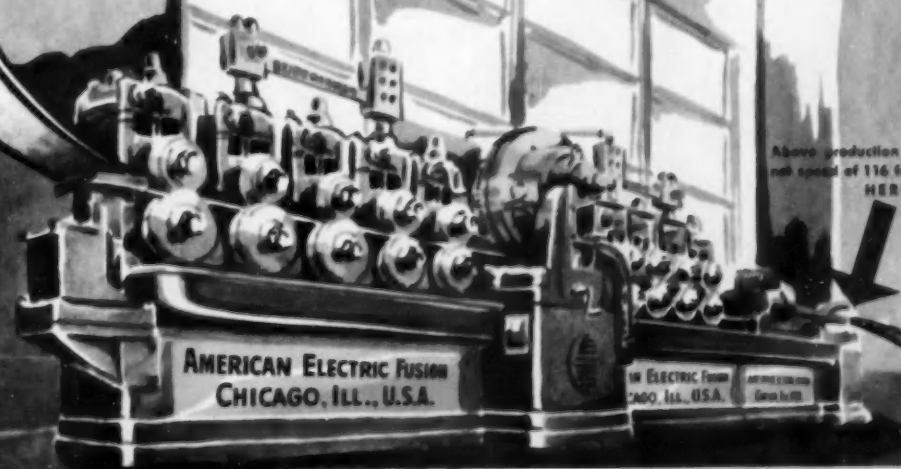
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gave us net production of 114,313 ft
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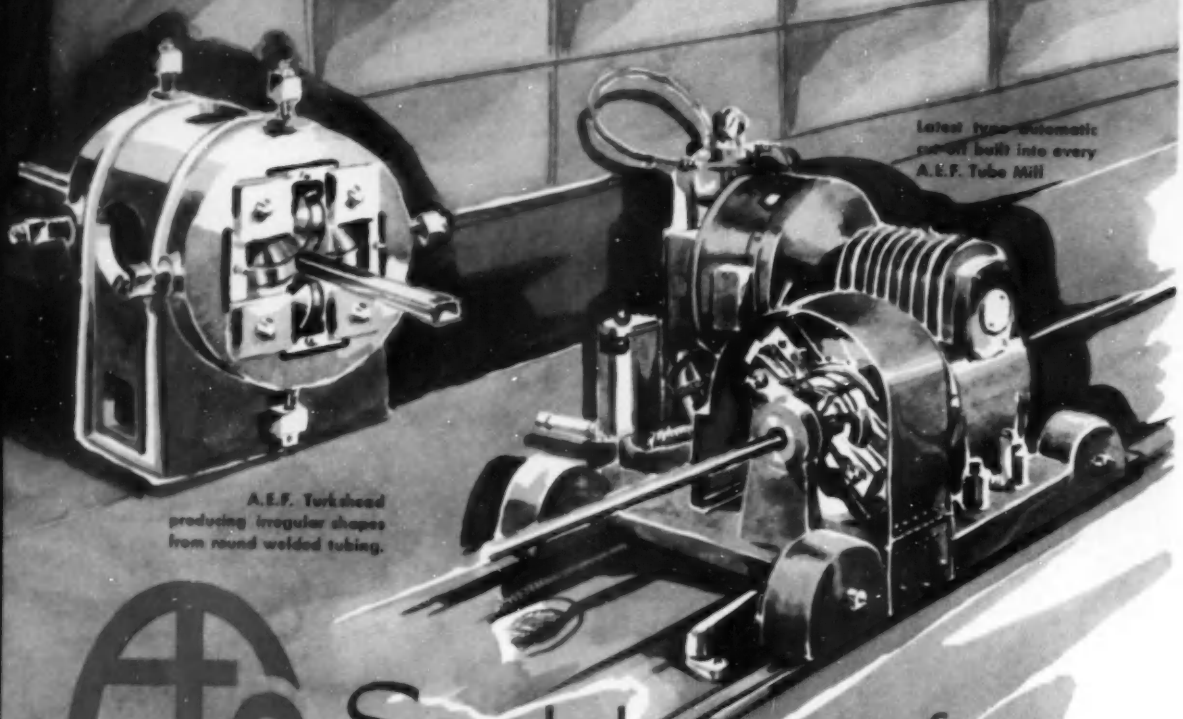
Above production figures mean
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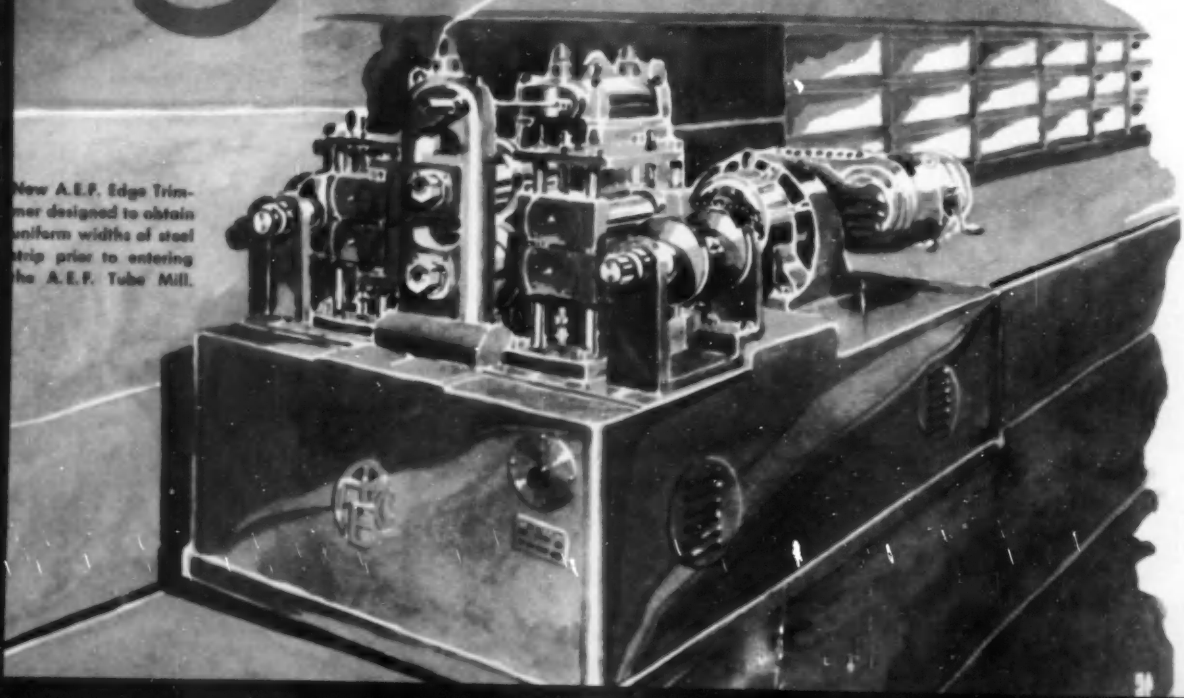
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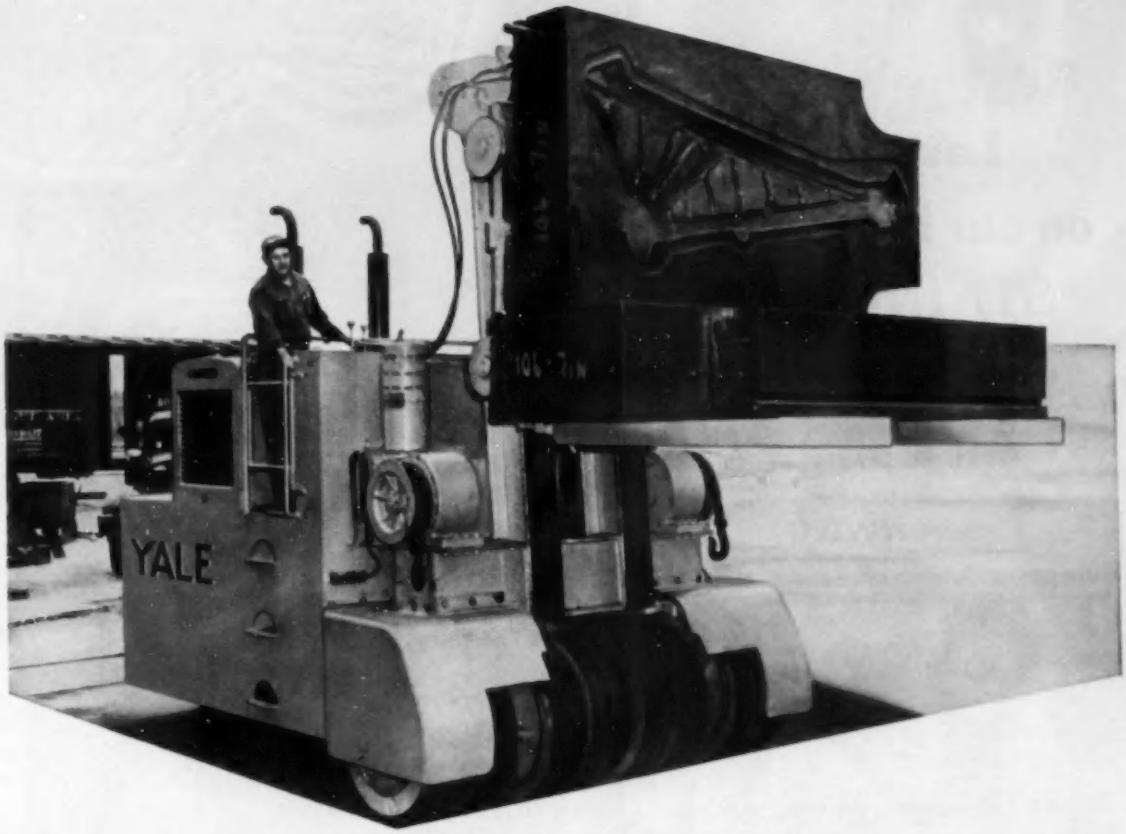
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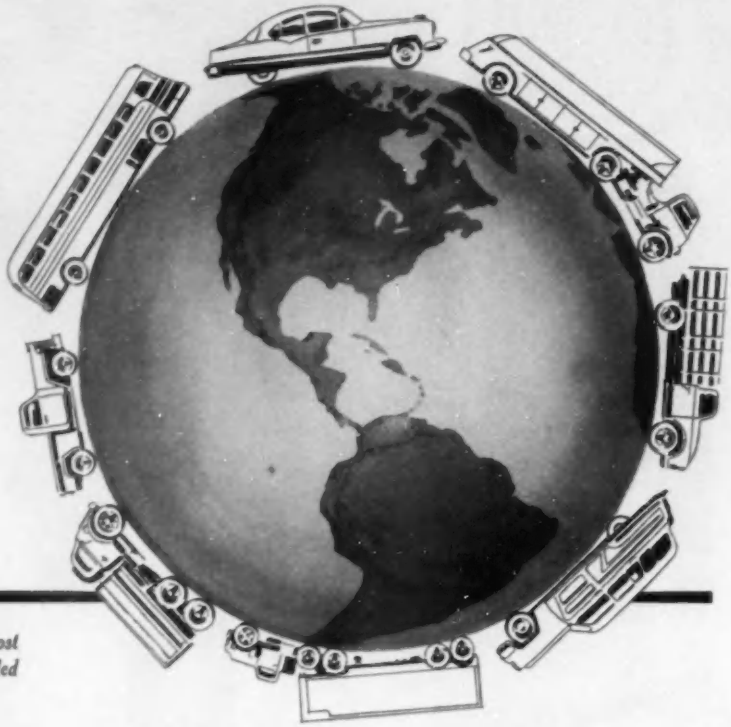
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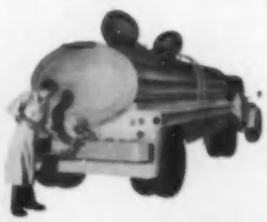
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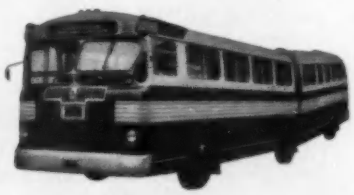
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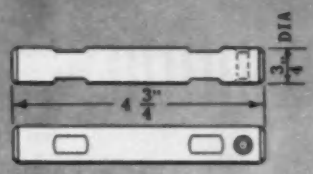
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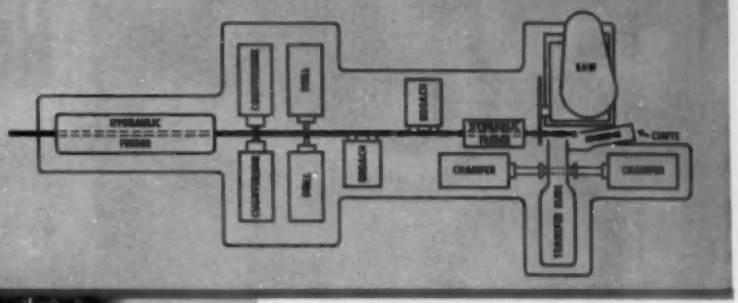
THE JOB TO BE DONE

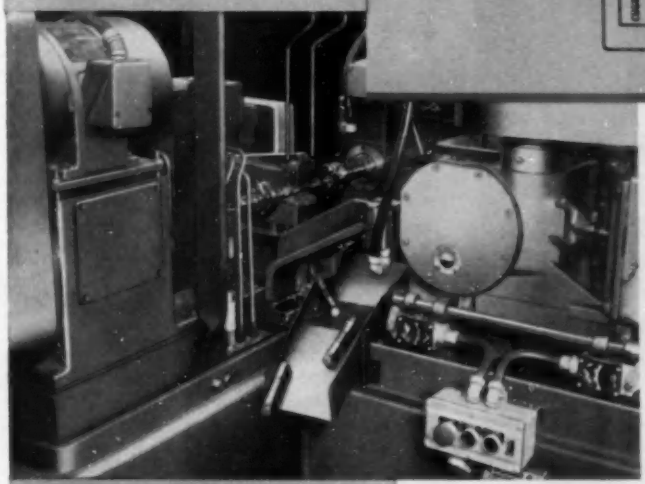


Part: Differential pinion shaft.

Operations: Countersink, drill, broach two sides, Triple-Chip cut off, and chamfer both ends.

HOW M & M DID IT BEST





M & M attained production of 300 pieces per hour at 100% efficiency.

Again, the one best answer is by a Motch & Merryweather in-line automatic transfer machine, designed and built for this one purpose. In-line speedy progression — no wasteful starting and stopping — stock clamping at each station — automatic stock bar loading can be added for complete automation. *Result:* rapid fire production that quickly pays out. This in-line machine is but one illustration of a production solution by Motch & Merryweather.

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By combining operations, production was increased with a minimum of floor space and labor required.

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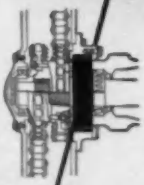
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BONDERITE and BONDERLUBE — aids in cold forming of metals

TROPICAL — heavy duty maintenance paints since 1883



This rugged motor grader, made by Caterpillar Tractor Co., Peoria, Illinois, features a tandem-swing drive in its rear wheel design which gives it great traction and grade accommodation.



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stands up where metals fail!

Graphited plastic laminate eliminates sleeve trouble in "Caterpillar" Motor Grader



On their Motor Grader tandem-drive housing pivot bearings, Caterpillar Tractor Co. experienced premature sleeve bearing wear. These bearings are subjected to intermittent oscillating motion and are difficult to lubricate. Field reports showed that metal sleeves became scored after only 300 to 600 hours of operation.

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Performs 23 operations every 18 seconds on automotive intake manifold!



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The Machine is equipped with a Buhr 60"-diameter 6-position automatic index table, complete with shot bolt.

Chips are disposed automatically by means of a rotating chip conveyor.

Parts are loaded one per station in each of the six single-place fixtures. Power wrench with torque-control, automatically operates clamping mechanism.

Buhr's precision manufacturing methods provide complete interchangeability of all parts and component assemblies.



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HIGH PRODUCTION MACHINERY

See what Buhr Economation can do to reduce your production costs. A phone call, wire or letter will bring you a prompt consultation with one of our top sales executives.

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ANN ARBOR, MICHIGAN

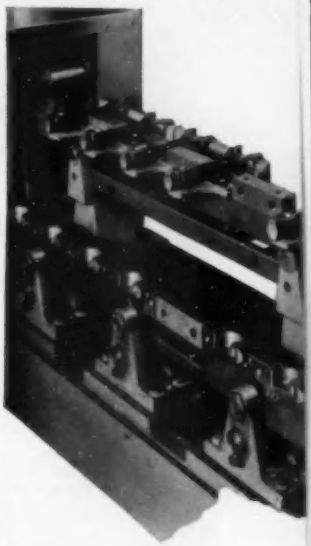
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another first . . . GREENLEE



2ND MACHINE

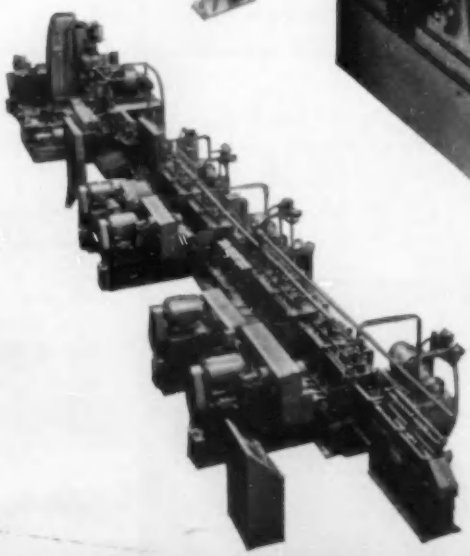
Caps and rods are machined simultaneously. Nests at each station hold work, avoid stresses. Bolt holes are drilled, reamed and inspected, countersunk, counterbored and chamfered. Locating slots and oil grooves are milled, and oil holes are drilled. Rods and caps are discharged to conveyor.





3RD MACHINE

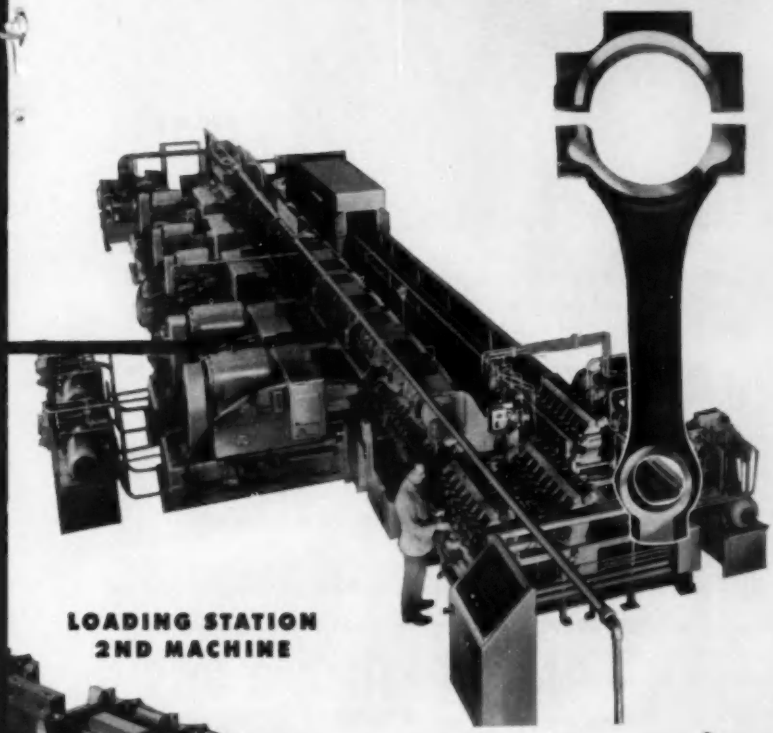
Mating surfaces have been ground, rod and cap assembled. Assembled rods are located and clamped in nests at each station. Crank holes are semi-finish bored, pin holes are finish reamed, both are chamfered. Rod is automatically gauged and accepted or rejected. Wrist pin bushing is assembled, burnished, chamfered at both ends. An oil hole is drilled through bushing, and rod is unloaded onto a conveyor.



CONNECTING-ROD TRANSFER MACHINES!

Greenlee Built Automation into Connecting Rod Production

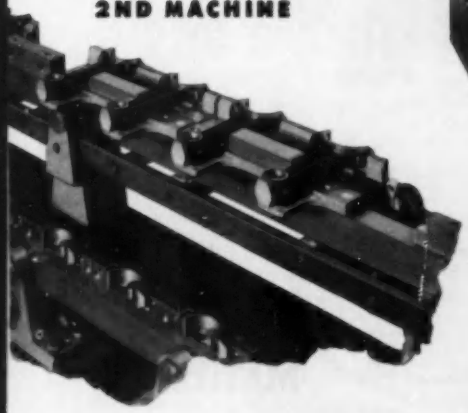
result: **GREATER ACCURACY, LOWER COST AND INCREASED PRODUCTION**



LOADING STATION 2ND MACHINE

1ST MACHINE

Single-piece rough forgings, with bosses finished, are pallet loaded. Clamping in nests avoids stresses. Crank holes are elliptical bored, pin holes drilled and reamed, caps cut off, caps and rods automatically unloaded onto a conveyor.



investigate

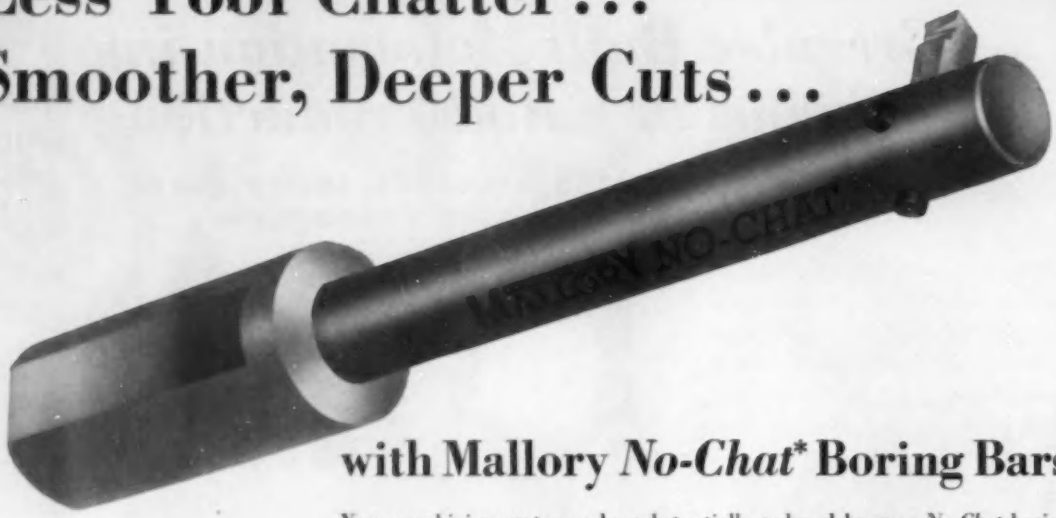
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PRODUCTION MACHINERY
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GREENLEE BROS. & CO.
1753 MASON AVENUE
ROCKFORD, ILLINOIS

Less Tool Chatter...
Smoother, Deeper Cuts...



with Mallory *No-Chat** Boring Bars

Your machining costs can be substantially reduced by new *No-Chat* boring bars—a revolutionary development of Mallory research that practically eliminates tool chatter.

No-Chat boring bars . . . and tool shanks . . . are made of a completely different kind of alloy whose physical characteristics inherently stop tool vibration at its source. Twice as heavy and 75% more rigid than steel, they produce smoother finish even on deep cuts. Their higher price is repaid quickly, many times over, by these cost-cutting advantages:

HEAVIER CUTS—Because chatter is greatly reduced you can set machines to remove more metal per pass.

SMOOTHER FINISH—Clean cuts often require no finish grinding.

LONGER LIFE BETWEEN GRINDS—Cutting edges last longer, due to reduction of vibration. And tools run cooler, for the *No-Chat* tool conducts heat away from the tip three times as fast as steel.

EASY BRAZING—Cutting tip can be brazed readily to the bar with any of a variety of brazing alloys. *No-Chat* is non-annealing . . . eliminates grain growth problems.

RE-USABLE—*No-Chat* boring bars or tool shanks can be used over and over with new tips.

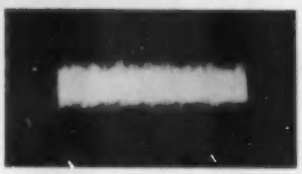
We'll be glad to discuss how this new idea in machine tool technology can put new performance into the tools you use or manufacture. Write today for our Technical Bulletin.

TESTS PROVE HOW *NO-CHAT* REDUCES CHATTER

These oscillograms show the greatly reduced amplitude of tool vibration with *No-Chat* shanks, using identical machine set-ups, when taking a 0.030" cut in low carbon cold rolled steel at 450 SFPM.



With ½" steel shank and style C-8 bit.



With ½" *No-Chat* shank and style C-8 bit.

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The man who needs a new machine tool and doesn't buy it is paying for it anyway...

in hidden tooling costs

THE difference between your costs and your competitors' may be hidden behind the production line. It's the cost of maintaining your tooling.

There's time lost for tool sharpening! Extra floor space for extra machines in the tool room! Skilled tool dressers! Chuck alignment and maintenance! Production lost for wheel dressing!

One answer to hidden tooling costs is Microhoning

Instead of bits to be sharpened and wheels to be dressed Microhoning uses self-aligning, self-dressing tools. Throughout their life Microhone abrasives make clean, uniform cuts.

Look behind the production line and you'll find that your hidden tooling expense may total more than the cost of the latest type of Microhoning equipment, which would assure you of increased output, uniform quality, consistent accuracy of dimension and a functional surface finish. In short, you are paying right now for the new machine tools you don't have.



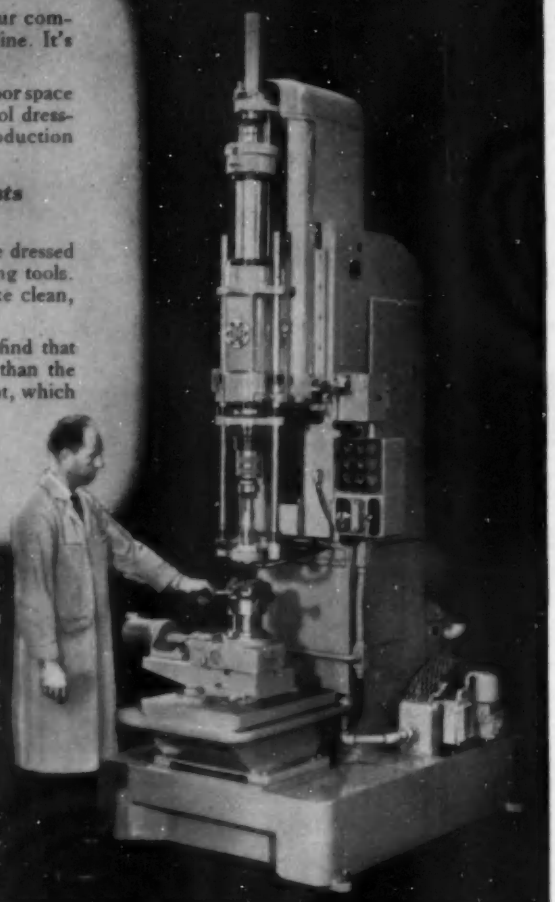
Surface: Spline in gear
Condition: Distorted by heat-treating

PROBLEM:

Excessive tooling cost—frequent changing and sharpening of tools—annealing of surface required—poor surface finish.

SOLUTION:

MICROHONING—Tool self sharpening—annealing not necessary—clean, consistent surface finish generated.



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MICROMATIC HONE CORP.
MICRO-MOLD MFG. DIV.
Boston Post Road
Guilford, Connecticut

MICROMATIC HONE CORP.
MICRO-MOLD MFG. DIV.
231 So. Pendleton Avenue
Pendleton, Indiana

REPRESENTATIVES: Allied Northwest Machine Tool Corp., 103 S.W. Front Ave., Portland 4, Oregon • Mason Machine Tool Company, 415 So. Second East, Salt Lake City, Utah • Perine Machinery & Supply Co., 1921 First Ave. South, Seattle 4, Washington

REPRESENTATIVES IN ALL PRINCIPAL COUNTRIES

MICRO-PRECISION DIVISION
2205 Lee Street, Evanston, Illinois

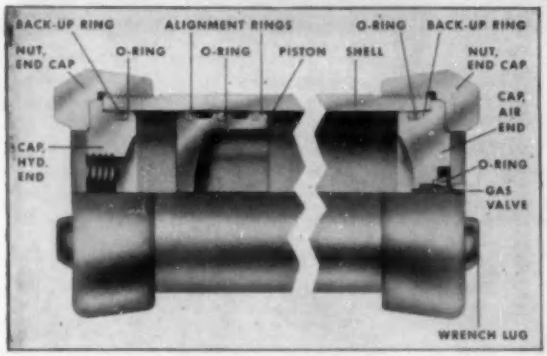
Hydraulic controls
Diesel fuel injection equipment

What's new for hydraulic systems?

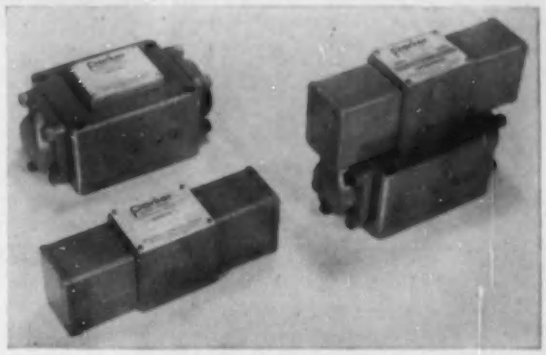


Answer: these unique new Parker components

New Parker control valve for mobile equipment positions a load more gently and exactly than any other valve. It has full feathering on both open-center and cylinder ports. Unique spool notches provide sensitive rate-of-flow control during crossover. It's offered in 1, 2, 3 and 4-spool designs with capacities up to 35 g.p.m.



New Parker piston-type accumulator has unique design that avoids wear and maintenance, provides greater safety. It's offered in 11 sizes. Oil volume capacities range from 10 to 1,155 cubic inches; maximum operating pressure rating is 3,000 psi.



New Parker directional valves for hydraulic machines meet J.I.C. standards. Solenoid models have capacity of 3 g.p.m.; the capacity of pilot models is 22 g.p.m. Spools may be spring centered, offset, or two position—no spring. Operating pressure is 2,000 psi.



Parker check valves deliver full-line capacity with minimum pressure drop. You get instantaneous response and absolutely tight checking . . . without poppet chatter.



Other Parker products include O-rings, *Hoze-lok* fittings, *Triple-lok* flare fittings, *Fenulok* flareless fittings. More Parker fittings are used on machinery than any others.

INDUSTRIAL HYDRAULICS DIVISION
Section 204-G
The Parker Appliance Company
17325 Euclid Ave., Cleveland 12, Ohio

- ☐ Send Hydraulic Control Catalog 1551A
- ☐ Directional Valve Cat. 1513A, 1514A, 1515A
- ☐ Accumulator Catalog 1536A
- ☐ Check Valve Catalog 1517A

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...heart of the spark plug!



Year after year, more than 12,000,000 spark plug insulators are shipped from the kilns at FRENCHTOWN to spark plug manufacturers all over the nation.

As the world's largest *independent* producer of spark plug porcelains since 1914, there are many reasons for the widespread acceptance of FRENCHTOWN products. Quality control is one.

For example, *every* FRENCHTOWN insulator is subjected to a rigid dielectric test (30,000 volts at 1.5 megacycles) . . . *every* insulator must pass an exacting surface inspection before and after glazing. These and other quality control measures which extend throughout all manufacturing processes help give FRENCHTOWN porcelain products the excellent dielectric and mechanical strength so essential in high voltage insulation.

Your best assurance of customer satisfaction is to be sure that the spark plugs you make are made with FRENCHTOWN insulators. They are used by more spark plug manufacturers than those of any other independent maker of insulators.

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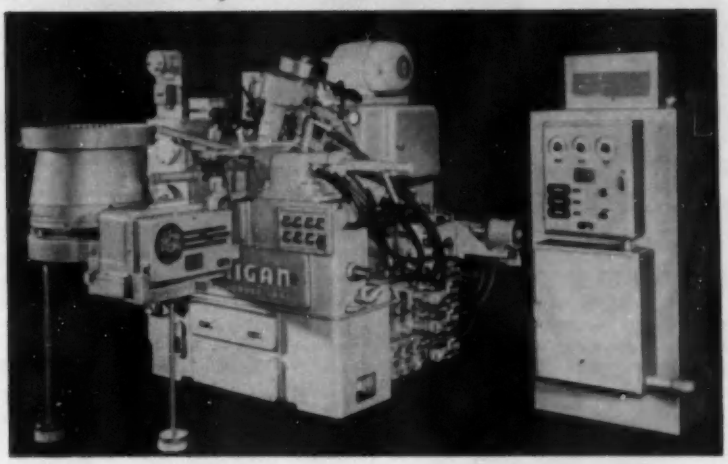
NEW EQUIPMENT PLANT • PRODUCTION

FOR ADDITIONAL INFORMATION, please use reply card on PAGE 355

Hobber Automatically Sets Center

AUTOMATIC high speed hobbing of gears within controlled specified size limits is now possible. Constant monitoring of gear size is provided in this setup, which automatically adjusts center distances between the hob and the gear blank to compensate for tool wear or size variation due to temperature changes.

Gear blanks are placed in the hopper-type loader for cutting on the type 1445 hobbing machine. Gear size tolerances are checked during 100 per cent of the production by the three-way Gear Classifier announced previously. Any variation from pre-set tolerances is picked up by the classifier and the proper signal relayed to the new Gear Controller. This device automatically adjusts the hobber's center distance keeping the gear sizes within specified tolerances. It also keeps a statistical record of production—the number of rejects, total production, etc., and it shuts down the machine when the total pre-determined gear production is reached, or should the helix angle not meet specifications. *Michigan Tool Co.*



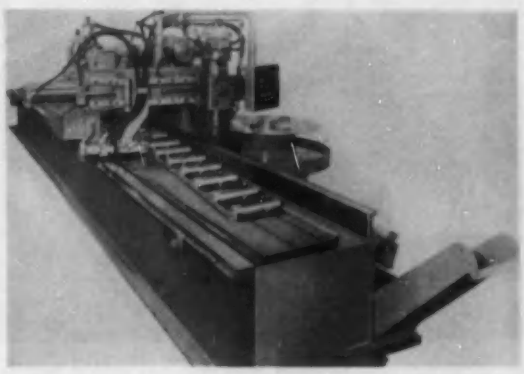
Circle 38 on postcard for more data

Cuts Templates Without Calculations

ACCURATE fabrication of both straight and helical contour templates is claimed to be greatly speeded and simplified by a template maker now being produced.

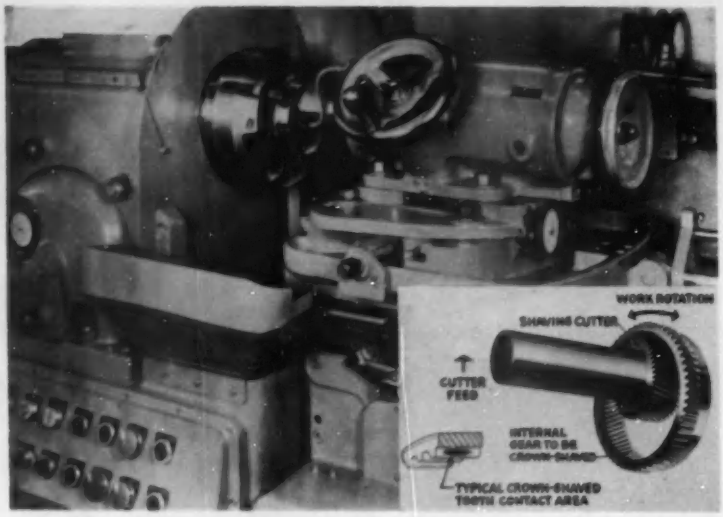
Involved calculations to determine cutter-to-follower offsets are eliminated. And, because the Template Maker cutter path automatically converts to the required circular path, helical templates are accurately produced without lengthy computations and layouts. Set-up can be made directly from engineering parts drawings by means of a series of locating point units and clamps which secure a spline bar or overlapping straight bars connecting the locating points. Set-up can also be made according to the loft method by which a full-scale layout is placed on the fixture bed and the spline bar or overlapping bars are clamped on top of the layout. Low follower pressure also permits tracing directly from sheet metal templates. Straight and helical templates can be made from the same setup. Straight template blanks are secured to a raised support rail on the top of the bed; helical template blanks are clamped to the rotating circular table, which is driven through a ring gear meshing directly with the rack on the bed. Movement of the carriage rotates the table at the same ratio to carriage travel as corresponding template holders on spar mills. *Farnham Mfg. Div. of Wiesner-Rapp Co.*

Circle 39 on postcard for more data



On the template maker, Longerons and other structural members can be economically milled.

New Process for Shaving Internal Gears



A closeup view of a model GCR Red Ring internal rotary gear-shaving machine as set up to produce crowned tooth forms, and a schematic photo showing the special cutter and new in-feed technique.

INTERNAL spur or helical gears can be produced by a new plunge-cut rotary shaving process, with or without crown-shaved surfaces, approximately twice as fast as conventional methods using cutter or work reciprocation, according to a recent announcement.

The tooth shape produced by the new process is like that of the company's Elliptoid tooth form. The gears are said to feature low noise level and long life. Usually teeth are slightly thinner at the ends than at the center. The maximum tooth thickness zone can be positioned either side of center, if desired. The amount of crown can be varied by the new method. This crowning feature, which in tooth thickness variation amounts to only a few tenths of a thousandth of an inch per inch of tooth face width, avoids tooth end bearing caused by minute errors or gear deflections under load.

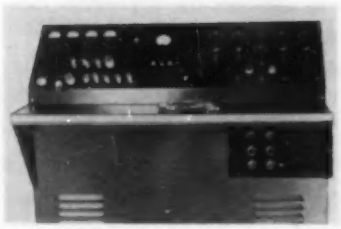
To crown shave an internal gear, it is mounted on the workhead of a conventional model GCR internal gear shaving machine. Then the cutter is meshed with the gear and hand-fed against a stop to position the cutter in correct axial location.

The shaving machine workhead is then rotated with the cutter in mesh with the work. The cutter is fed up to depth in predetermined increments with no cutter reciprocation. This is known as plunge-cut in-feed and permits the cutter to form a crowned tooth surface while simultaneously finishing the gear tooth surfaces. The rotary shaving cutter is slightly wider than the gear teeth being shaved. *National Broach & Machine Co.*

Circle 40 on postcard for more data

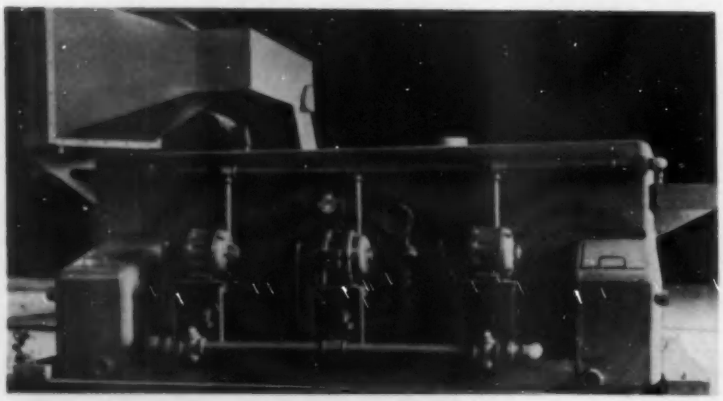
Propeller Test

Introduction of a specially designed electronic drive in a new propeller synchronizer test stand provides speedier response and more accurate regulation in the testing of aircraft propeller synchronizers and associated stepmotor electric heads and tachometer generators. Model PS-4 provides for the complete overall and component testing of the synchronizer assembly. Panel mounted selector switches enable the operator to pin point particular malfunctions within the synchronizer assembly. The stand's oscilloscope checks the output pattern of the commutator switches of the synchronizer. A synchroscope is also provided, indicating the degree of synchronization of the slave engines to the master. *Greer Hydraulics, Inc.*



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Rocker Arms Cleaned in Drum Machine



Cincinnati 30-in. drum type cleaning machine.

IN less than 120 sq ft of floor space, a machine for valve rocker arms soak washes, spray washes, rinses and dries up to 84 cu ft of metal per hour. The machine is a 30-in. diameter hopper-loaded horizontal drum with a five-in. high internal worm which transports the parts through the various operations. Parts progress through the machine at 27 ipm. The first 18 in. of the drum is the soak wash. Then comes an 84-in. section in which the parts are sprayed with hot cleaning solution and allowed to drain. This is followed by a spray rinse and drain section 48 in. long. The final operation is a 54-in. hot air blowoff. *Cincinnati Cleaning & Finishing Machinery Co.*

Circle 42 on postcard for more data

(*Turn to page 448, please*)

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FREE LITERATURE

Large V-8 Engine 1

Complete specifications, dimensions and engineering details of a new Red Seal 240 hp, 603 cu in. ohv V-8 engine are available in a colorful six-page file folder. Maximum torque is 500 lb-ft. Bulletin No. V81054. *Continental Motors Corp.*

Digital Instruments 2

Basic digital units for counting, recording and control include several models and types. Brief descriptions are given in a four-page folder. *Brush Electronics Co.*

Disk Brake 3

Latest version of the Ausco disk brake is cleverly shown in a folder with transparent overlay pages for taking the brake apart. *Auto Specialties Mfg. Co., Inc.*

Full Gage Line 4

A large spiral-band catalog of standard gages is ready, covering cylindrical plug and ring, taper-master setting disks, adjustable limit, and thread gages and miscellaneous equipment. There are 45 pages of engineering data as well. *Sheffield Corp.*

Sectionized Automation 5

This illustrated booklet describes the development based on the division of a machine into sections, any one of which can be shut down while the others remain in automatic operation. *Cross Co.*

Aluminum Welding 6

Vol. 4, No. 3, "Resistance Welding At Work," covers several case histories of three-phrase electric resistance welding equipment by fabricators of small aluminum assemblies. *Sciaky Bros., Inc.*

Forgings 7

A new forgings catalog and engineer's handbook illustrates the various types of forgings the firm produces from more than twenty nonferrous forgings materials, details various forgings data, and covers machined forgings. *Scovill Manufacturing Co.*

Electric Trucks 8

A 24-page catalog, illustrating and describing its complete line of electric rider-type trucks of 2000 to 4000 lb, is now being offered by the *Raymond Corp.*

(Please turn page)

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Airless Blasting 9

A new bulletin on the 48 by 42-in. Tumblast, an airless blast cleaning machine employing the tumbling principle in conjunction with the hurling of metallic or non-metallic abrasives, has been published by *American Wheelabrator & Equipment Corp.*

Tubing Guide 10

A general tubing catalog, eight pages, groups pertinent information needed for the selection and application of 46 principal analyses of tubing into five classifications: stainless steel, nickel and nickel alloys, carbon and alloy steels, beryllium copper and titanium. A short summary of the principal properties of each analysis and its normal production limits is given. Bulletin 40. *Superior Tube Co.*

Precision Riveting 11

Design, performance and markets of Airflex machines for such coldflow operations as riveting swagging, flaring, reducing, enlarging and aircraft dimpling are discussed informatively in a new folder. *Lemert Engineering Co., Inc.*

Fifth Wheel Lock 12

Description of an automatic or manual lock for tractor fifth wheels is given in a four-page folder. *Pioneer Tool Engineering, Inc.*

Plating Control 13

An automatic cut-off plating switch just placed on the market is discussed in a four-page folder. *Hoffman Plating Co.*

USE THIS POSTCARD

Rudder Control 14

Prevention of the spiral dive is the object of the Arcon automatic rudder control for light aircraft. Discussion and details of the device in folder LC-115. *Lear Inc., Learcal Div.*

Collodial Graphite 15

Illustrated bulletin. No. 427, discusses the use of 'dag' collodial graphite as a parting compound for glass molding, on clutch plate separators, as anti-weld coatings and gasket coatings, as anti-seize for screw threads, in corrugated boxboard manufacture, rubber molding, foundry work and other industrial operations. *Acheson Colloids Co.*

Torque Converters 16

Torcon torque converters are extensively illustrated in an eight-page brochure which depicts models, shows attachments for specific adaptations, and describes, with cutaway drawings, construction of the converters. *Clark Equipment Co., Transmission Div.*

Custom Plating

A 32-page, picture-and-text booklet describing new custom plating facilities and discussing the history and some of the technical aspects of plating is offered. To obtain "Precision Plating, A Product and A Service," address a request on your company's letterhead to *Standard Pressed Steel Co., Box 611, Jenkintown, Pa.*

Spring Washers

Engineering principles of spring washers are given in an elementary explanation of 16 pages. Write for "Spring Lock Washers" to *Herbert S. Blake, Jr., Spring Washer Institute, 74 Trinity Place, New York 6, N. Y.*

Recorder

The Tetco type R-500 wax-coated chart recorder, which makes permanent records of any machine speed or production rate while counting the units of production is described in 16-page bulletin 541. Typical charts are calibrated in revolutions per minute, miles per hour, feet per second, pieces or packages per minute or per hour, etc. Case histories are given. Write to *The Electric Tachometer Corp., 2218 Vine St., Philadelphia 3, Pa.*

(Turn to page 442, please)

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YOU CAN COUNT ON CONTINENTAL FOR EVERY FASTENER NEED!



Only Continental Offers You All 14 Types of Tapping Screws!

Here's another reason why Continental can help cut your fastener costs

Continental is the only producer making all 14 types of thread-forming and thread-cutting screws. These are part of Continental's vast selection of standard screw styles and sizes which number over 1,756,000.

This gives you the largest choice in the industry and, combined with Continental's top position in the production of special fasteners, it guarantees faster service and a top-quality product.

Continental will back you up with over 50 years experience, and we are proud of our hard-earned slogan—*You can always count on Continental for every fastener need.*

Continental Screw Co.

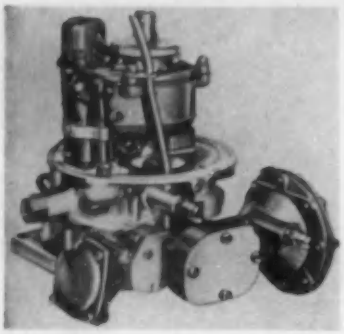
Manufacturers of Holtite Fastenings

NEW BEDFORD, MASSACHUSETTS, U. S. A.

NEW PRODUCTS

FOR ADDITIONAL INFORMATION, please use reply card on PAGE 355

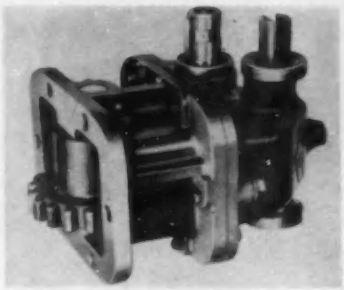
Four-Barrel Carburetor for Trucks



A new four-barrel carburetor-governor combination is to be adopted as original equipment on all tractors and trucks in International's new 220 series. Designed to increase both engine output and power range, it also features a built-in governor, and vacuum controlled barrels. The secondary barrels remain closed at low engine speeds. Then, as engine speed increases to a point where additional breathing capacity is needed, the vacuum controlled secondary barrels open automatically. *Holley Carburetor Co.*

Circle 111 on postcard for more data

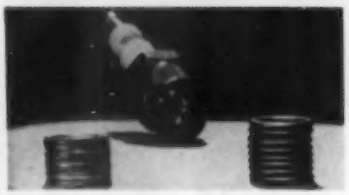
Two-Gear PTO



Now being marketed is a medium duty two-gear single speed power take-off adaptable to applications such as pump operations, pulling cables, operating farm machinery and generators, ordinary dump body work, and other intermittent operation jobs. Two models of the new Spicer Power Take-Off are available: Models FA and FB. A feature of the former is low shaft speed, and elimination of case interference with the output shaft. *Spicer Div., Dana Corp.*

Circle 113 on postcard for more data

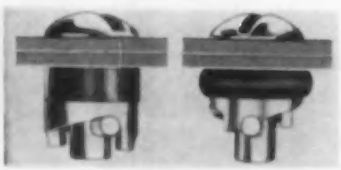
Steel Spark Plug Gasket



Introduction of a 14-mm steel spark plug gasket has been announced. It is three-fold and made of a special steel, zinc-plated and di-chromated. Free thickness is 0.065 in., seated with 30 lb-ft of torque. *Champion Spark Plug Co.*

Circle 112 on postcard for more data

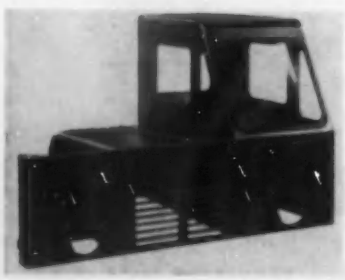
Rubber Makes Fastener, Isolator



Expanding rubber provides the locking mechanism for the Vibrex fastener and vibration isolator, for panels and assemblies. The fastener locks in metal, plastic, glass or composition board. It consists of a single unit, requires no separate receiver and locks in a plain hole. The fastener is water, dust and pressure proof. A simple half turn either locks or disengages the unit. *The General Tire & Rubber Co., Industrial Products Div.*

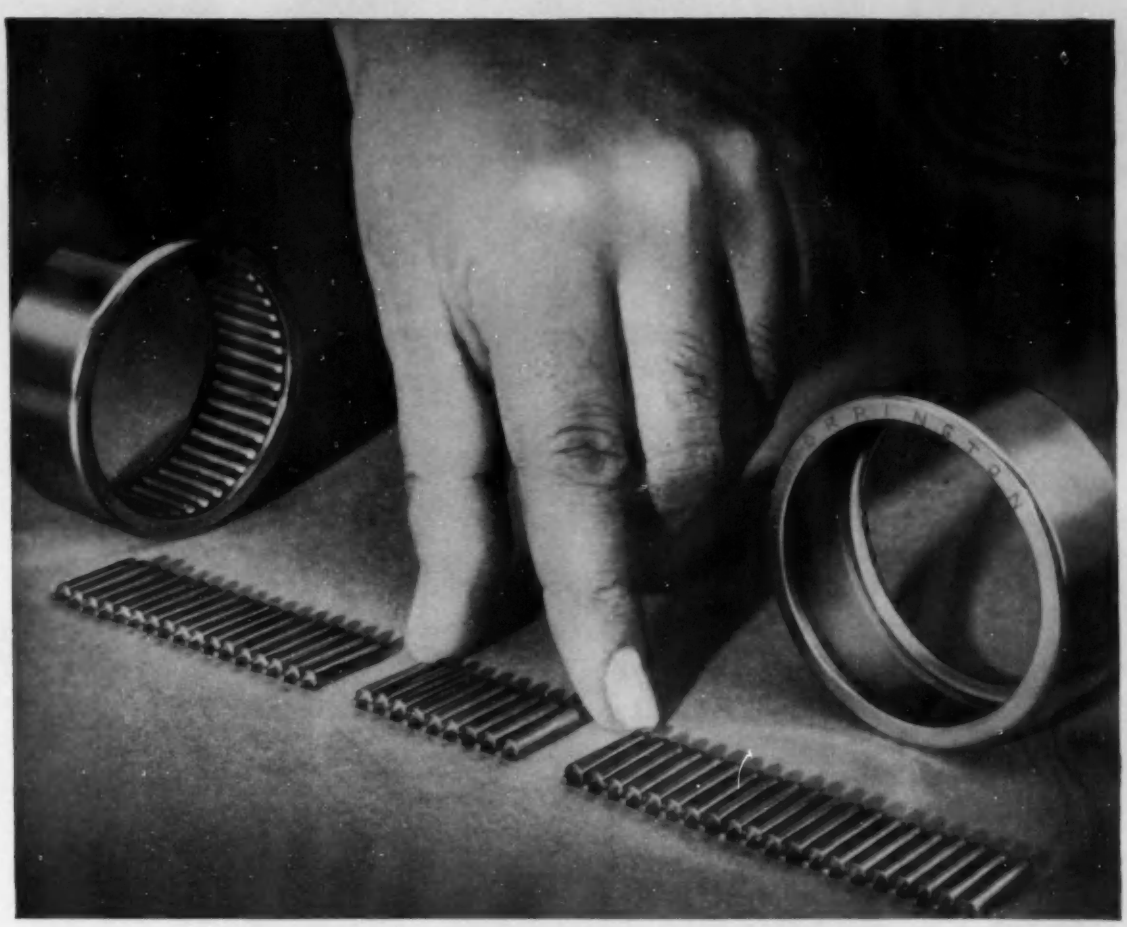
Circle 114 on postcard for more data

One-Man Cab for Many Vehicles



A heavy-duty one-man cab can be rapidly installed on flat platform trucks or tractors, truck-mounted cranes, concrete ready-mix trucks, special construction machines and carriers of long metal objects o' lumber, the manufacturer reports. The cab is welded of 16-gage sheet steel. Design of the cab can be readily modified for special applications. Dimensions of the cab are: height—54 in.; front to back—57½ in.; width—32 in.; door opening—27 by 48 in.; weight—about 275 lb. Optional designs include instrument panel, doors on both sides, cowl ventilator, hole for headlamp and special windows. *Crenlo, Inc.*

Circle 115 on postcard for more data



"Here's where the TORRINGTON NEEDLE BEARING *gets its high load capacity"*

The radial load capacity of an anti-friction bearing depends, in the final analysis, on the number of lines or points of contact made by the bearing surfaces in the load zone. This is where the Torrington Needle Bearing really shines.

With its full complement of precision-ground rollers, the Needle Bearing gives many more lines of contact than other types of anti-friction bearings. Thus for a given size, the Needle Bearing has a *greater* radial load capacity than other bearings.

What does this do for your product? The Needle Bearing can give you the benefits of its high-capacity performance for little more than the cost of a plain bearing; it can help you reduce the size and weight of surrounding members without sacrificing shaft strength, thickness or rigidity.

For twenty years, our Engineering Department has helped designers and manufacturers throughout industry to adapt the unique advantages of the Needle Bearing to their products. Let us help you make the Needle Bearing "standard equipment" in yours.

THE TORRINGTON COMPANY
Torrington, Conn. • South Bend 21, Ind.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON NEEDLE BEARINGS

Needle • Spherical Roller • Tapered Roller • Cylindrical Roller • Ball • Needle Rollers

These features make the **TORRINGTON NEEDLE BEARING** *unique*

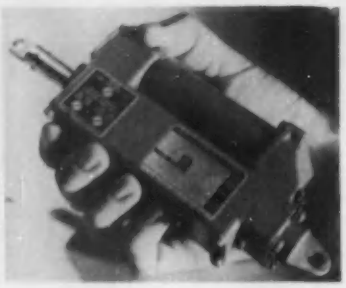
- low coefficient of starting and running friction
- full complement of rollers
- unequalled radial load capacity
- low unit cost
- long service life
- compactness and light weight
- runs directly on hardened shafts
- permits use of larger and stiffer shafts

NEW AIRCRAFT PRODUCTS

FOR ADDITIONAL INFORMATION, please use reply card on PAGE 355

Lighter Actuator

A linear electrical actuator just announced weighs 1.16 lb, compared to 2.2 lb for the model it replaces. Dimensions are 1.25 by 2.73 in.,



against 1.9 by 3.73 in. for the previous model. It is said to be applicable to trim tabs, artificial feel controls and similar places where operating loads of up to 150 lb are encountered. Static rating is 500 lb tension or compression. A choice of gear ratios, jackscrews and motors are offered. *AiResearch Manufacturing Corp.*

Circle 116 on postcard for more data

Inverter Line

Two new three-phase high-altitude inverters have recently gone into production.

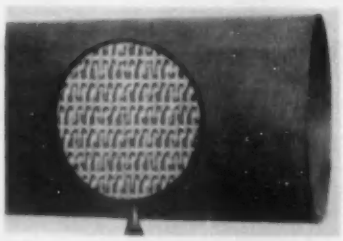
The motor-generators are designed to deliver full-rated load at altitudes to 50,000 ft and at least half-rated load as high as 65,000 ft. They are self-cooled and attain their high-altitude performance through the utilization of large commutator with staggered brushes. The inverters feature a single, compact plug-in frequency and voltage control, rotary relays, new two-stud d-c terminal blocks, and AN connectors for a-c power output connection. F-131-1 is rated at 1500 va; F-148-1 is rated at 2500 va. *Jack & Heintz, Inc.*



Circle 117 on postcard for more data

Mesh for Cooling

Rigimesh porous wire cloth grades now available are intended primarily for use in transpiration cooling of after-burner liners, ram jet combustion chambers, gas turbine control plugs and turbine blades. The material is made by welding together the



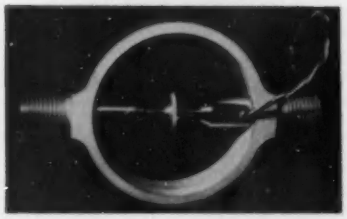
warp and woof strands of one or more layers of woven wire cloth and then mechanically treating to produce a homogeneous plate having much finer openings but with the uniformity of the starting material. Tensile strength at room temperature exceed 60,000 psi for some permeabilities. Strength can be made a directional property.

Flow capacity for coolant gases and liquids may be varied from as much as 15 fps (900 cfm/sq ft) at one psi differential pressure, to as low as 0.2 fps at one psi. An excellent degree of uniformity in flow is claimed to be obtained. Flow capacity can be varied from point to point in a controlled manner. Materials of construction include all alloys which can be drawn in the form of wire. For moderate temperature service, types 304 and 316 stainless steel are available. Alloys such as L-605 will be stocked for higher temperature applications. *Aircraft Porous Media, Inc.*

Circle 118 on postcard for more data

Load Transducers

Series 140 load transducers now are available in ranges from 500 to 50,000 lb. Based on the differential trans-



former principle for measuring minute displacements of an iron core in an inductive field, the transducers feature one per cent linearity, and a frequency range from zero to 1000 c. Transmitted values can be measured with an accuracy better than one per cent and indicated, recorded, or used for control functions using associated equipment available from the manufacturer. *Daytronic Corp.*

Circle 119 on postcard for more data

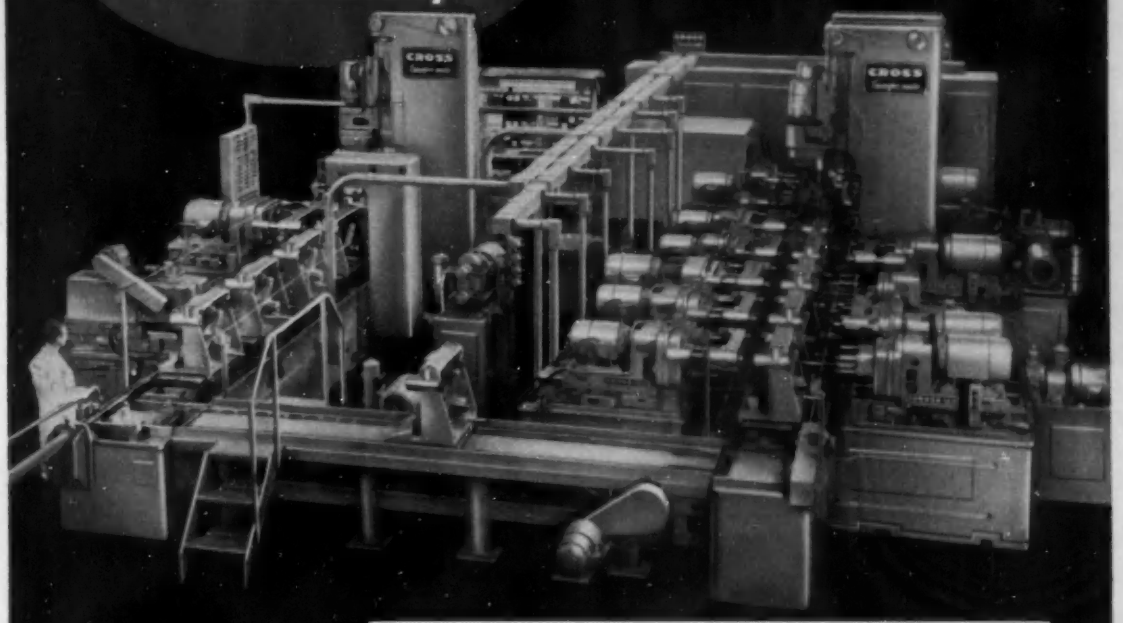
Pressure Switches

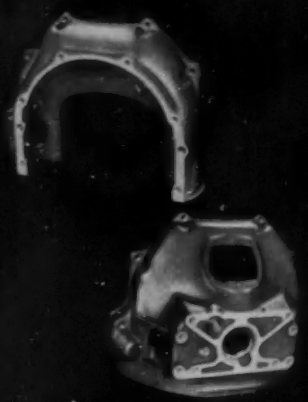
A line of small sensitive pressure actuated switches now available will handle pressures from five to 12,000 psi. They weigh approximately four oz. They are built to withstand surge pressures up to 7500 psi at 30 cycles per minute. Through the temperature range of –65F to 275F the sensitivity setting and tolerance is ±3½ per cent at 3000 psi and 1500 psi, ± five per cent at 500 psi and ± ten per cent at 100 psi. The manufacturer states the switches will not sense pump ripple. *Leach Relay Co., Div. of Leach Corp.*

Circle 120 on postcard for more data

Machines Flywheel Housings and Changes Set Up Automatically

Another Transfer-matic by Cross





★ Completely machines (except for grinding three faces) flywheel housings for both standard and automatic transmissions.

★ Flexibility for scheduling because either part may be produced as required—set up changes and proper tools are selected automatically at each station.

★ 170 pieces at 100% efficiency.

★ 49 drilling, 22 chamfering, 4 reaming, 2 counterboring, 2 boring, 30 inspecting, and 30 tapping operations.

★ Palletized work holding fixtures with automatic transfer from station to station.

★ Hydraulic power wrench for clamping parts.

★ Other features: Complete interchangeability of all standard and special parts for easy maintenance; construction to J.I.C. standards; hardened and ground ways; hydraulic feed and rapid traverse; automatic lubrication.

Established 1898

THE CROSS CO.

DETROIT 7, MICHIGAN

Special MACHINE TOOLS

Synchro-Start

AIR BRIEFS

By RALPH H. McCLARREN

Heliports

With the current ever-growing interest and activity in the use of helicopters for passenger, mail and express operations the problems of helicopter performance, useful load characteristics and heliport design are being considered by the Rotorcraft Committee of the Air Transport Association. A recent meeting was held in New York to discuss the problem and review a series of reports dealing with the detail design recommendations and operational requirements for helicopters including communications and navigational aids requirements.

Charles Froesch, Chairman of the Rotorcraft Committee, will participate in a forthcoming meeting of the International Aid Transport Association Meetings in Brussels where he will present a consolidation of the recommendations made by air line representatives in this country.

Helicopters and their operation present problems unique to the air transportation industry. Because of their operation in proximity to city centers careful attention has to be given to these problems—noise, clearance of obstructions, availability of emergency landing areas, air navigation aids and providing for adequate loading and unloading as well as terminal facility areas.

Convertiplanes

The Bell Aircraft Corp. has recently announced two interesting developments in this field. At Buffalo, N. Y., they have been test flying a light airplane powered by two turbojet engines. These engines are mounted either side of the fuselage just below the single high-wing of the aircraft. With their tail cones pointed downward sufficient thrust is developed to lift the aircraft into the air. Small nozzle jets are provided for control. After vertical rising from the ground, the jet engines are slowly rotated 90 deg to a horizontal position to furnish thrust for forward flight and as forward speed is gained, the lift is furnished by the fixed wing. The aircraft then continues to fly as a jet powered plane until preparation for landing. To land, the turbo-jet engines are rotated back to the vertical position to furnish direct downward thrust and under the control of the pilot can achieve vertical landing. In case of emergency or power failure the aircraft would land as any normal fixed wing plane.

Bell Aircraft's helicopter division at Fort Worth, Texas, is readying for flight tests of its XV-3 Convertiplane which was developed under contract with the United States Air Force and the United States Army. It depends upon two large diameter, three-bladed rotors which act both as lifting rotors and propellers to provide forward thrust. The rotors are located at the tips of the single wing and are designed and constructed to rotate their axis from a vertical position forward through an angle of 90 deg to a horizontal position. For vertical flight, like a helicopter, the rotorshafts are upright and the two rotors operate in a horizontal plane to furnish sufficient direct lift to provide flight characteristics like a helicopter. In fact the machine is designed to fly straight up and down, hover, fly left, right, backward and forward. Once sufficient altitude is gained in vertical flight and some forward speed achieved by tilting the rotors slightly forward, conversion is then to be made by tilting the rotors further and further forward as speed is increased so that they operate as large diameter propellers and the lift of the machine is borne by the fixed wing. The Bell Aircraft Co. has been working on this aircraft since 1951. It was designed as a utility liaison aircraft for the Army. The advantage of the airplane is to obtain increased speed and efficiency in forward flight comparable to the airplane and better than the helicopter.

Proponents of the convertiplane type of aircraft predict a wide use in air transportation especially in inter-city use in the 150-600-mile flight range. The ability of such a craft to land and take off from centrally located heliports and to fly at relatively high cruising speeds would provide a short haul passenger operation largely untapped to date by fixed wing aircraft.

Need for Engineers

The critical shortage of engineers and scientists in America is potentially a greater threat to our national security than are any weapons known to be in the arsenals of aggressor nations.

(*Turn to page* 407, *please*)

Synchro-Start

AUTOMATIC ENGINE CONTROLS



FULL AUTOMATIC CONTROL SETS

For gasoline or diesel engines and providing automatic start, stop, and safety protection. Individual signals warn of any engine failure.

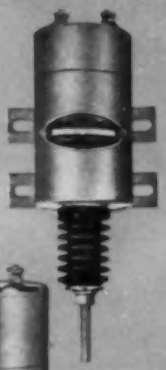
8⅞" high	13⅝" wide	4½" deep



SAFETY ALARM SETS

Have visual signals plus an audible alarm in case of any abnormal engine condition. Can be furnished with automatic shut-down.

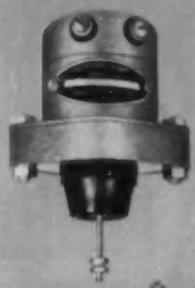
7⅜" high	5⅞" wide	3⅛" deep



SD SOLENOIDS—D.C. ONLY

A heavy duty solenoid in standard and special voltages up to 120 volts D.C. Available with terminals or standard air craft type AN connector.

4⅜" long	2½" diameter



SS SOLENOIDS—D.C. ONLY

Continuous duty solenoids for operating throttles, chokes, fuel pump racks, etc. Available with various fittings and connectors.

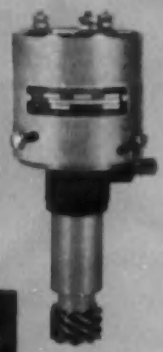
4⅜" long	3⅜" diameter



GH SERIES GOVERNORS

For standard SAE tachometer drive take-off and available with one or two speed sensitive switch operations.

6" long	2 15/16" diameter



GS SERIES GOVERNORS

For standard distributor take-off to accommodate gear or coupling drives and performing one or two speed sensitive switch operations.

7¼" long	2 15/16" diameter



OIL & WATER SWITCHES

Oil pressure switches for low oil pressure protection—Immersion type water switches to operate at any predetermined temperature.

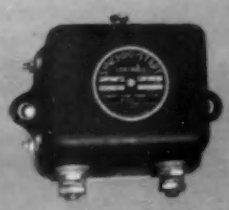
Oil 3½" long	2⅜" diameter
Water 4 7/16" long	2¼" diameter



SPECIAL ENGINE CONTROL PANELS

Custom built panel boards or cubicles for any desired engine control operation, emergency power or load transfer control.

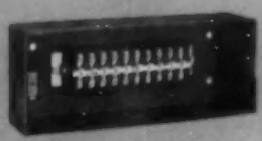
66" high	22" wide	12" deep



STARTING MOTOR CONTACTORS

Relays designed to carry large amounts of current for cranking the engine. Variations are manufactured to fit individual needs.

4¾" high	5 9/16" wide	2 21/32" deep



JUNCTION BOX

A numbered terminal bar enclosed in a steel case with bolt-on cover and knock-outs for conduit wiring.

4½" high	11" wide	2⅜" deep

Synchro-Start Products Inc.

Mfrs. of Automatic Engine Controls Since 1932

8151 N. RIDGEWAY AVE.
SKOKIE, ILLINOIS

The BUSINESS PULSE

Continuing Rise in Industrial Production Reflects Gains in All Three Major Components—Durables, Nondurables and Minerals. Increased Activity Has Not Been Fully Reflected in Employment.

This Survey Is Prepared Exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Company of New York.

Rapid Advance in Activity

Business reports are still on the favorable side, pointing to a more rapid advance in the general level of activity than has been expected by most observers. Barring some unforeseeable obstacle of compelling force, the momentum already generated would seem sufficient to sustain the economy for the next several months at least.

Industrial production, as measured by the Federal Reserve index, rose in January for the fifth consecutive month, although the rate of advance was somewhat slower than it had been in the final quarter of 1954. The January increase carried the index to 131 per cent of the 1947-49 average. The current level is one point above the December figure, eight points above the 1954 low, and six points above the comparable figure a year ago.

The over-all rise in the index reflected gains in all three major components—durables, nondurables and minerals. The advance in durables was due largely to increases in the automobile and steel industries. Chemicals and petroleum products were major factors in the rise in nondurables. The increase in minerals arose largely from a gain in output of crude oil, which has registered a sharp recovery from the relatively low level of the summer and fall, and is now the highest on record. This striking improvement apparently reflects a better inventory position, combined with large demand owing to severe weather over much of the country.

Over-All Business Expansion

Retail trade also is giving a good account of itself. The total for January, seasonally adjusted, was 10 per cent above the figure a year earlier and only one per cent below the very high December level. Favorable public response to the new automobile models was a factor in the good showing, along with large sales of furniture and appliances, undoubtedly stimulated by the housing boom. Sales of apparel were smaller than in December, but this decline is attributed in part at least to the exceptionally large Christmas trade and the resulting smallness of post-holiday stocks.

Later reports indicate that there may have been some further slackening of retail sales in early February, although any such tendency was presumably of minor significance. Industrial activity, on the other hand, seems to have been well sustained. Over-all business volume, therefore, has probably continued to expand.

The marked rise in activity in recent months has not been fully reflected in employment. Employment in nonfarm establishments in January, seasonally adjusted, was only about one per cent above last summer's low, although the rise in business activity has been considerably greater. One reason for this disparity is the increase in the average length of the work week. It is doubtful, however, that this is the sole explanation. Another factor seems to have been a rise in productivity, that is, in average output per man-hour of employment.

Improved Conditions in Labor Market

While employment has not risen as fast as output, the business revival is reflected in improved conditions in the labor market. The normal decline in nonfarm employment and the rise in unemployment from December to January were slightly less marked than usual. Strength in such basic industries as automobiles and steel suggests that seasonal increases in unemployment in February and March, if such occur, will be smaller than those a year ago.

This prospect is of considerable potential importance, because it has become usual for the seasonal rise in unemployment during the winter to be made the basis for insistent demands for drastic governmental action. Such demands subsided in the latter

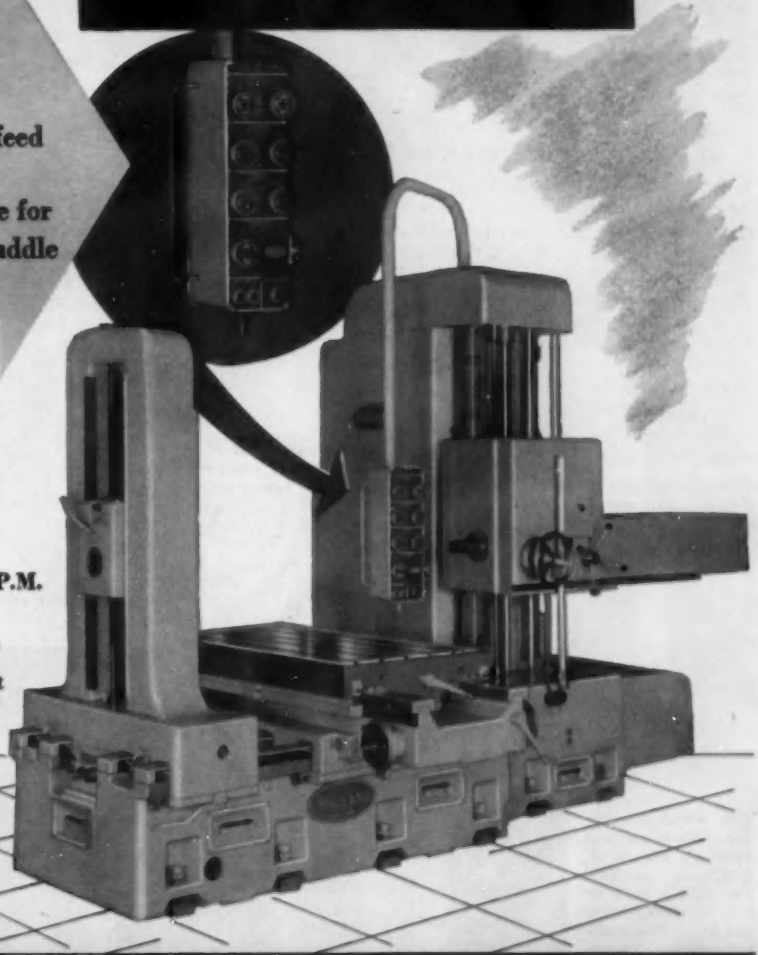
(*Turn to page* 414, *please*)

the NEWEST member of Famous Family

SEVENTY FIFTH
BULLARD
ANNIVERSARY

3 II HORIZONTAL BORING MILLING and DRILLING MACHINE

PENDANT CONTROL
Complete **machine control from a movable station for feed and speed selections, directional feed and traverse for Spindle, Head, Table and Saddle**



ADDITIONAL FEATURES

- **Both Screw and Rack Feed to the spindle**
- **Massive 4-Way Bed, Head, Headpost and Rear Post for rigidity**
- **Spindle Speed up to 2000 R.P.M.**
- **Replaceable Ways, chrome hardened, on Bed and Saddle**
- **Optical measuring equipment for head and table (optional)**

FOR FULL INFORMATION CALL YOUR NEAREST BULLARD SALES OFFICE OR DISTRIBUTOR OR WRITE . . .

THE BULLARD COMPANY | BRIDGEPORT 2, CONNECTICUT

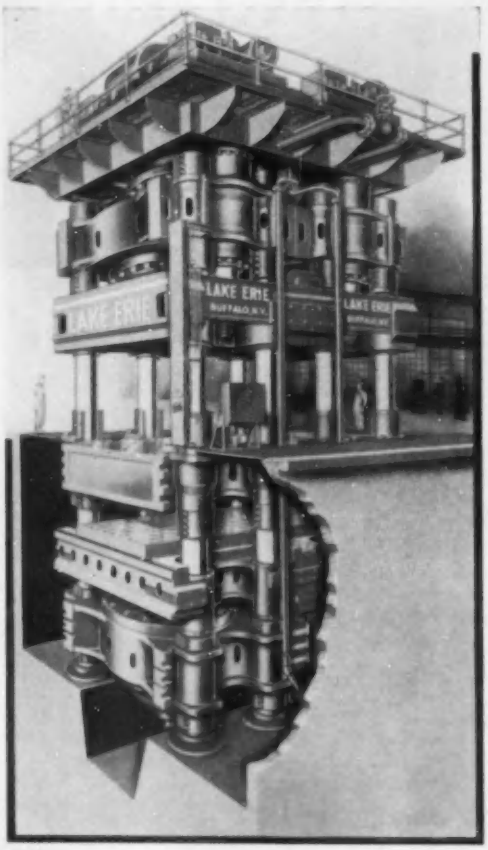
News of the MACHINERY INDUSTRIES

By Thomas Mac New

Progress in New Equipment continues with the Development of Huge Metal-Forming Press, Completely Automated Crankshaft Lathe, and Large Center Column Machine.

Aircraft Industry Gets Huge Hydraulic Press

A 10,000-ton metal-forming hydraulic press, which is among the world's largest, has been delivered to the McDonnell Aircraft Corp., St. Louis, Mo. Designed and built by Lake Erie Engineering Corp., Buffalo, the press is made up of two 5000-ton self-contained units which can be operated either individually or simultaneously. Each of the two-column type units is a single-action press with a 4500-ton cushion. Because the production use will be a stretch forming operation for an aircraft part, the design provides for an allowable eccentric loading of 50 per cent. Future additions can be made at either end of the press so that an ultimate tonnage of 20,000 tons can be obtained.



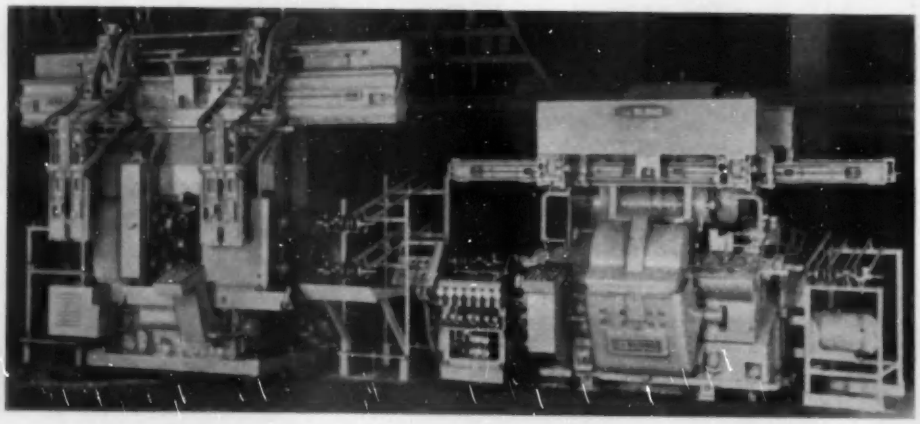
New Lake Erie 10,000-ton hydraulic press for aircraft parts. The press has a bed measuring 288 in. by 110½ in. Closing speed is 425 ipm and pressing speed is 20.5 ipm.

One Minute Per Crank

A completely automated lathe for turning crankshafts has a production rate of 55 cranks per hour. Designed for precision cast V-8 crankshafts, the lathes, developed by R. K. LeBlond Machine Tool Co., Cincinnati, are part of a completely automated setup consisting of three pieces of equipment.

In the first stage, an automatic line bearing center-drive lathe turns all five main bearing journals, flange and pilot, sprocket diameter and front end simultaneously. After being automatically transferred to a Sheffield gaging machine, the diameters of Nos. 1, 3 and 5 main bearing journals and the thrust wall with No. 3 main bearing journal are automatically inspected. Automation then carries the crankshafts to an automatic two-spindle pin turning machine where all the pin

(*Turn to page 466, please*)



This three-machine automated setup built by the R. K. LeBlond Machine Tool Co. is used to turn 55 crankshafts per hour. The loading racks shown with the equipment are temporary fixtures used only by the machine tool builder for runoff.

Pressroom saves $16,982 in oiling labor in 4 years with Farval lubrication

FARVAL—
Studies in Centralized Lubrication
No. 159

HOW fast and how dependably could men with grease guns and oil cans lubricate 1294 bearings on 36 presses? The answer is—not fast enough—15 to 20 minutes per press, with the press shut down. And not too dependably, for bearing failures and consequent expensive shutdowns result when bearings are skipped in the lubrication cycle.

These shortcomings of hand lubrication led an Indiana metalworking plant to install Farval Centralized Systems of Lubrication four years ago.

Farval is economical

For a modest average cost of $295 for smaller presses to $1,164 for larger, Farval was installed to protect expensive bearings and to maintain production schedules. The four-year record shows Farval has already saved this company $16,982 in man hours alone. Farval has also saved uncounted thousands of dollars in production time and thousands more in bearing repairs and lubricant cost.

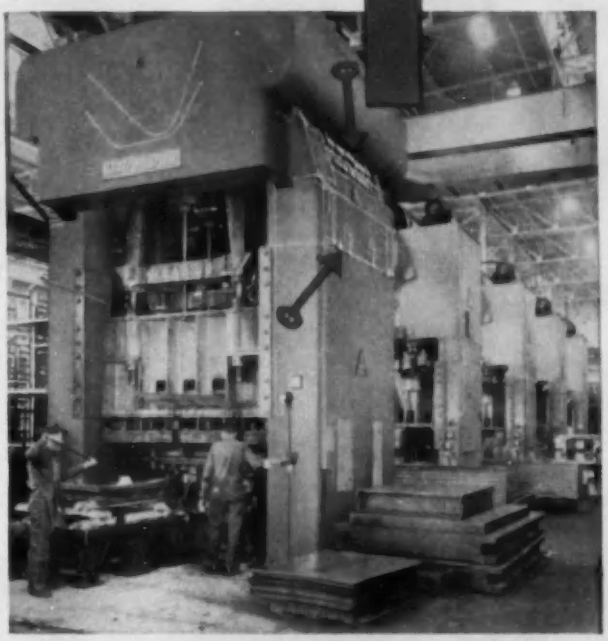
How Farval works

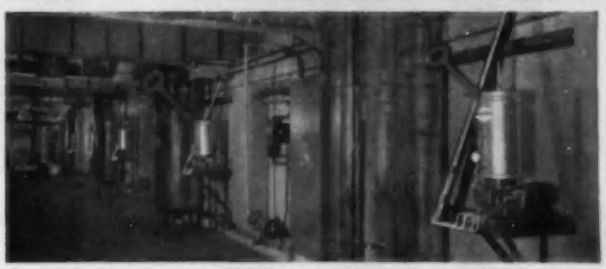
Farval is the original Dualine system of centralized lubrication that hydraulically delivers oil or grease exactly measured, to each individual bearing as often as desired. The Farval valve is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Indicators at every bearing show that each valve has functioned. To lubricate an average press with Farval takes only one minute *while the press is in operation!*

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KEYS TO ADEQUATE LUBRICATION—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.

Top and bottom: These presses in a large metalworking plant are lubricated by Farval automatic systems for which pumping stations are set up directly below them in the basement. Photos courtesy of Budd Company.

Application of High Temperature Materials to Aircraft Power Plants

(*Continued from page 235*)

steel material that can be used up to the low end of the temperature range, around 1200 F.

17-4 PH, 17-7 PH—Age hardenable stainless steel materials that have high strength-weight ratios at lower temperatures, but that find some application in the temperature range around 1000 F.

Discalloy 24 — An age hardenable stainless steel primarily used as forged wheel alloy up to 1300 F.

* All alloys are available in all shapes and forms unless specifically noted.

B. Nickel Base Alloys

Inconel — An 80 per cent nickel, chromium, iron alloy that has seen much use as a low strength, high corrosion resistant material at elevated temperatures. It is hot short (low ductility) at 1200 F and is not commonly used in powerplant structures today.

Inconel X—An age hardenable offspring of inconel containing titanium and aluminum for age hardening that is tops in strength up to 1600 F of all high temperature alloys. It is difficult to fabricate, must be heat treated after forming. It has found widespread use as a combustion chamber material for afterburners as well as many other applications.

Incoloy — A critical alloy reduced version of Inconel X with somewhat lower properties.

Nimonic 75,80,90—A series of British developed alloys similar to Inconel X in composition and function.

Hastelloy B—A Haynes Stellite development that contains molybdenum as the major alloying element and no chromium. The absence of chromium and high percentage of molybdenum lowers its scaling temperature. It has excellent strength to 1600 F and higher.

Hastelloy C—Another Haynes Stellite product that contains chromium for increased scaling resistance and has been used for high strength applications to 1800 F and above. However, its high critical alloy content and fabrication characteristics limit its use.

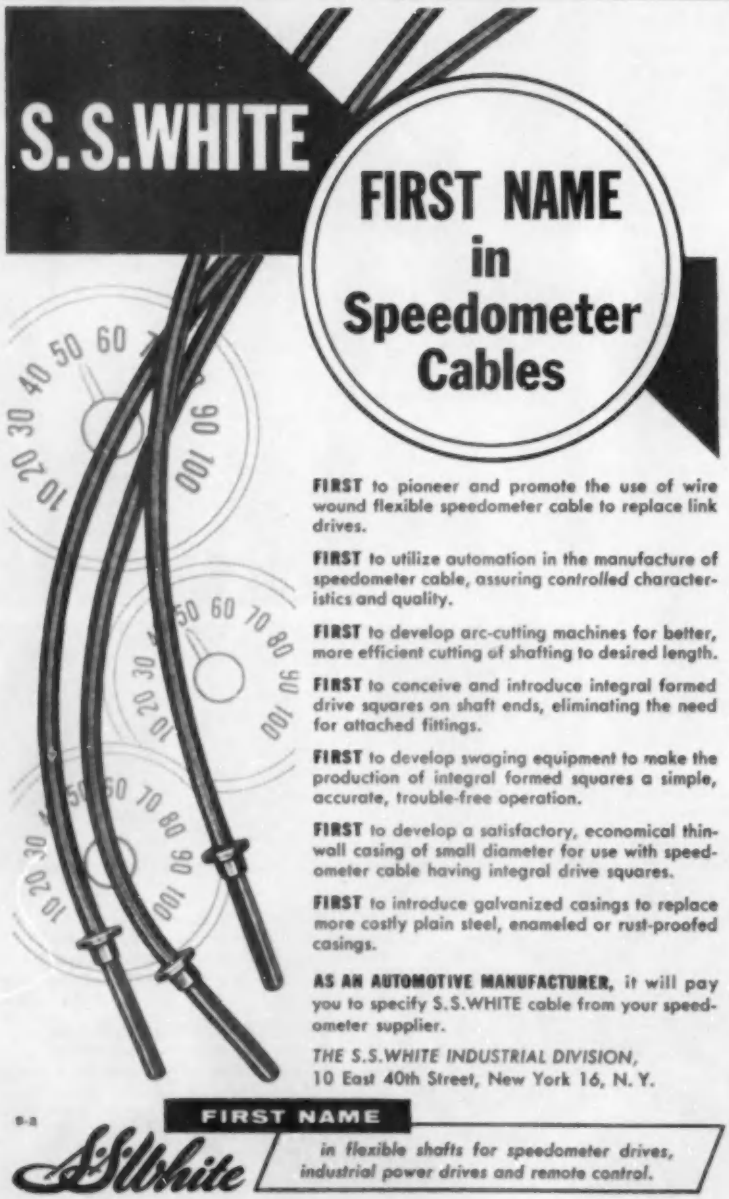
Hastelloy X—A critical alloy reduced version of other Hastelloys that combines excellent scaling resistance with good strength. It is being used more and more in combustion chamber and component applications of all powerplants.

C. Cobalt and Mixed Base Alloys

N-155 (Multimet) — A chromium, nickel, cobalt, iron mixed base alloy that has become somewhat of a work horse in the temperature range from 1200 F on up. It is considered a scrap base alloy. It has good high temperature properties to 2000 F, compared to all other alloys, can be readily fabricated, requires no heat treatments.

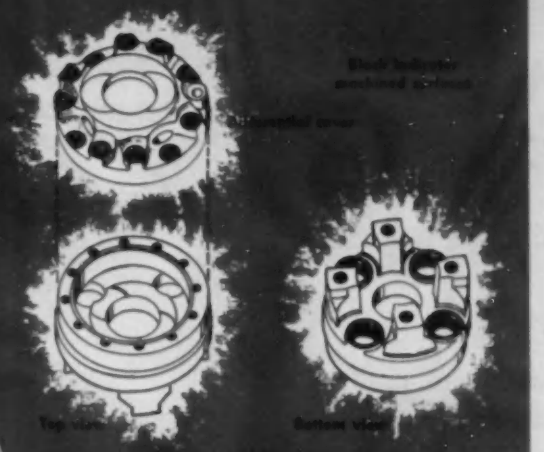
S-816 — A mixed base alloy with three per cent or higher of columbium, tungsten and molybdenum. It is high on the critical alloy list, has excellent strength at the higher temperatures.

(*Turn to page 370, please*)



CUSTOMER SPECIFIED

Customer specified a multi-purpose production machine to perform 12 operations in sequence on both the main casting as well as the cover of a differential housing.



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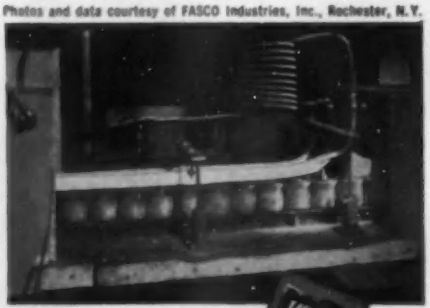
HERE'S A TYPICAL EXAMPLE of the reasons why the EASY-FLO low-temperature silver brazing alloys are so extensively used in the automotive and aviation industries. It shows how easy it is to get fast production of high-strength liquid and gas-tight joints with these alloys. And note that no brazing skill is needed. All this adds up to metal joining costs that are surprisingly low.



EASY-FLO 45 WIRE RING

The unit is a pressure switch which is part of the Studebaker anti-creep "hill holding" device. The job is brazing the threaded spud into the cover. Operator sets covers in cylindrical holders on an endless chain and in the covers she places the spuds, each one with a ring of EASY-FLO 45 preplaced. Assemblies pass thru an induction heating coil (below) – 14 a minute.

Photos and data courtesy of FASCO Industries, Inc., Rochester, N.Y.



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High Temperature Materials

(*Continued from page* 368)

It has been used extensively for forged turbine blades.

Refractalloy 70—A mixed base alloy with high molybdenum that has good elevated temperature properties. It is not widely used.

L-605 (H.S.25)—A cobalt base material that is the strongest of all high temperature alloys above about 1600 F. It is only used where high stresses exist at the upper end of the temperature range (1700-2200 F). High critical alloy content.

H.S. 21, 23, 30, 31, etc.—A series of cobalt base casting alloys. They are commonly used for cast turbine blades and other high temperature applications requiring high strength.

Considerations in Selecting a Metal for an Elevated Temperature Application

The strength of a metal at elevated temperature can take several forms, dependent on the type and duration of loading. Short time tension, compression, shear and bearing strengths are of primary importance in the design of short service life powerplants. The properties of creep and stress rupture are also important, especially as the service life increases. Other mechanical properties such as fatigue strength, notch-impact and notch tensile strength and modulus of elasticity must be considered in most designs. Thermal shock and fatigue are also important strength factors.

The strength properties of metals generally decrease with increasing temperature. This fact is the result of different elevated temperature mechanisms depending on the alloy considered. Age hardenable materials over-age, thereby reducing their strength. Work hardened materials anneal themselves at operating temperature. Materials containing many different alloying elements form new phases at elevated temperature and can lose strength or become brittle. In addition, the atomic bonding that holds metals together and gives them strength changes when subjected to the additional heat energy, and by various mechanisms result in a lowering of strength.

Because metals lose strength at elevated temperature by several mechanisms, the service temperature and life of the component must be carefully

(*Turn to page* 374, *please*)

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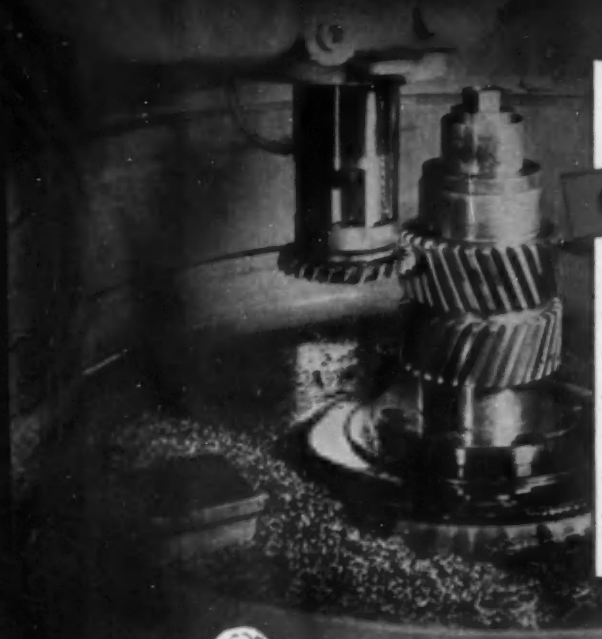


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Spur and Helical
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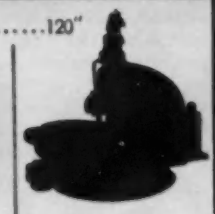
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yes	yes	yes	yes	yes	yes
7" spur, 6 1/2" hel.	7" spur, 7" hel.	12 inches	18 inches	36 inches	120 inches
6 spur, 6/8 hel.	5/7 spur, 6 hel.	3/4 spur, 5/7 hel.	3/4 spur, 5/7 hel.	3 spur, 4/5 hel.	2 spur, 4 hel.
1 1/2" ext., 1" int.	2" ext., 2" int.	3" ext., 3" int.	5" ext., 3" int.	6" ext., 6" int.	8" ext., 8" int.
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FOR COMPOSITE CHECK				
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4 inches	***	18 inches	12 inches	12 inches

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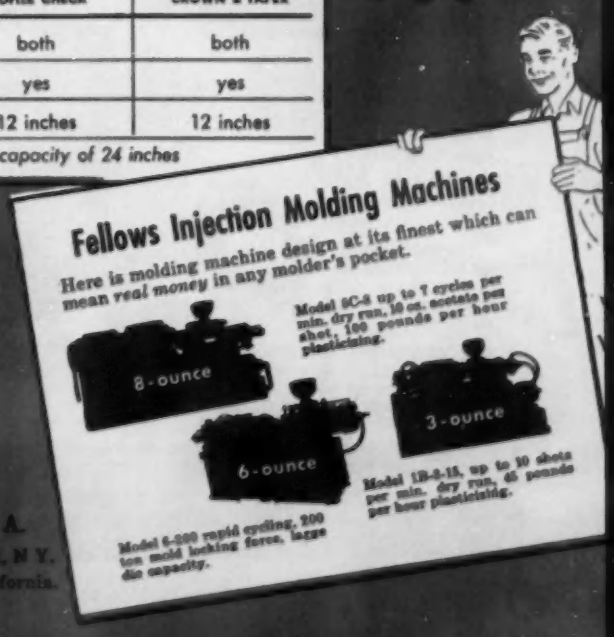
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Application of High Temperature Materials to Aircraft Power Plants

(*Continued from page 370*)

considered before the material is chosen. The various measurements of strength must be integrated to prevent a material high in one strength property being selected for an application where a high temperature peculiarity of the metal will result in failure. Some metals have comparatively high short time strength but considerably lower creep strength than others. Some metals have hot short or brittle ranges at certain temperatures. Others precipitate constituents in grain boundaries at certain temperatures that severely reduce their performance under load.

The rate of change of strength with temperature varies with the alloys. Inconel X in its heat treated condition is the strongest material up to about 1600 F due to a hot-short phenomenon. L-605, a high critical alloy content material retains the greatest strength at temperatures in excess of 1600 F. Other materials, combining wide limits of properties, fall below these materials in strength at elevated temperatures.

The strength level at 1800 F and up for alloys is very low. However, many of the high temperature components of afterburners and ramjet engines can be designed to function at temperatures up to 2200 F for short times. It is essential, however, that the strength be known at these temperatures so that compensating increased thicknesses can be used. Unfortunately, data at the higher temperature levels is rather limited. Some excellent work recently done by the Haynes Stellite Co. obtained data on short time tensile properties up to 2400 F, or just about to the melting temperature of the alloys tested.

In addition to mechanical properties, the physical properties of metals such as coefficient of thermal expansion, thermal conductivity, emissivity, etc., become very important factors in elevated temperature service.

Thermal stresses due to differential expansion of parts subject to different temperatures or differential expansion at a joint between metals of different thermal expansion can compose as much as 50 per cent and higher of the total applied load on the part. Many cases of failure due to differential thermal expansion are on record. In general, a low coefficient is desired. However, equally as important, in the case of dissimilar metal joints, is an equal coefficient of thermal expansion, high or low.

Thermal conductivity becomes critical in applications such as combustion chambers where it is important that heat be rapidly distributed and dissipated. This is especially true where uneven combustion produces hot spots. Since most high temperature alloys have comparatively low thermal conductivity, differential heating and hot spots can easily lead to severe distortion and actual burning thru the metal. Thermal stresses causing failure are often the result of inability to distribute heat evenly throughout a part.

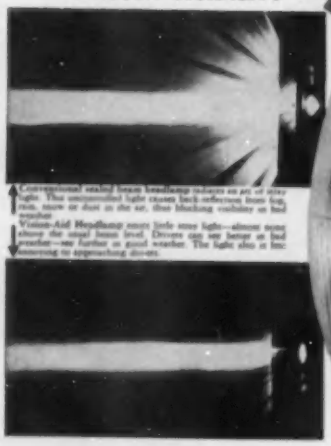
A property only recently seriously considered by the powerplant designer is emissivity. This property is a measurement of the amount of incident radiant heat that can be absorbed into or leave a given surface. Properly

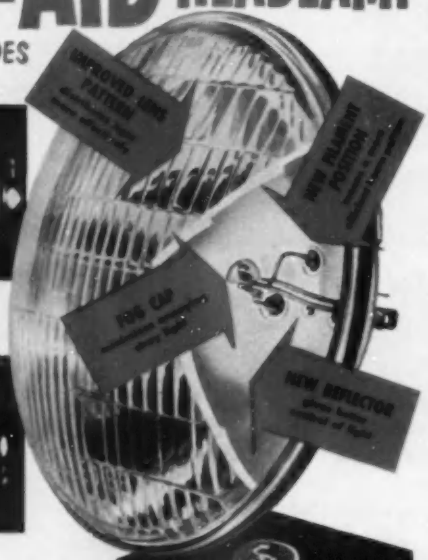
(*Turn to page 376, please*)

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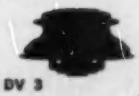
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High Temperature Materials

(*Continued from page 374*)

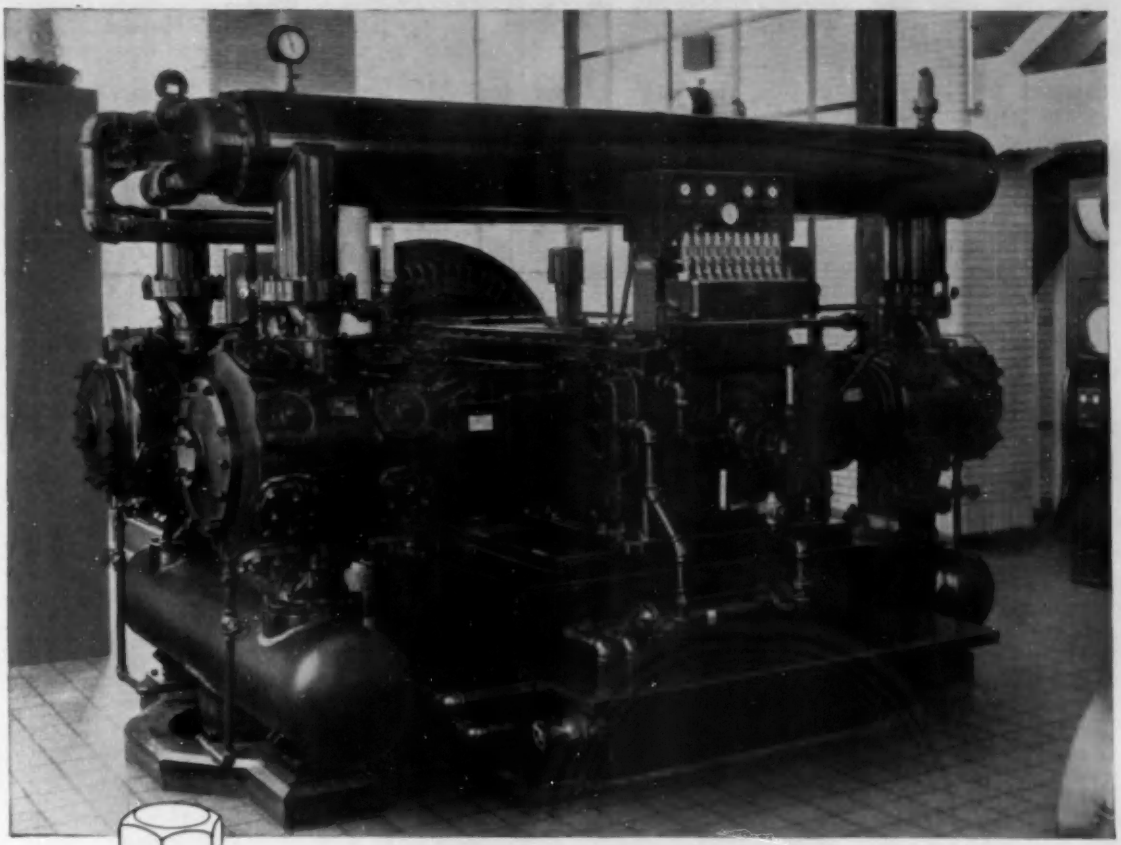
speaking, emissivity is the ratio of heat radiated by a body to that radiated by a black body at the same temperature. Absorptivity is heat absorbed relative to that of a black body at same temperature. For common combustion chamber materials, emissivity is numerically equal to absorptivity. An emissivity factor of 1 is that of a black body which will absorb the maximum amount of heat and also dissipate the maximum amount. It is important in combustion chambers to have an inside surface with as low an emissivity factor as possible, in order to reflect a maximum growth of radiated heat from the combustion gases. On the other hand, a ramjet engine combustion chamber outer surface is open to the sky and should have as high an emissivity factor as possible to radiate more heat from the wall to the sky. The factor of emissivity can mean hundreds of degrees in operating wall temperature.

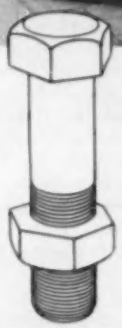
The available supply in the U.S.A. of many of the alloying elements that compose high temperature alloys is limited either by the scarcity of the element in the earth or by the overseas source of the element, or both. The amount of any element that is available in this country at the time of a national emergency can have a great effect on its outcome. For this reason, the Government has stressed the importance of minimum critical alloy content in the designs of power plants for piloted aircraft and missiles. Since the end of the Korean War, the supplies of critical alloys have increased measurably. However, the principle of minimum critical alloy content must be continuously practiced. Some of the alloying elements used in high temperature alloys that have been in critical supply in the past few years are nickel, cobalt, columbium, molybdenum, chromium and tungsten. The changing supply picture continues to modify this list. Stock-piling also has an effect on present and future critical alloy supplies.

It can be seen that practically all of the elements that are used in high temperature alloys have been or are considered in critical supply.

Fabrication Characteristics

In general, high temperature alloys present greater difficulties to the fab-





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that's all Ford had to do

Expanding operations at Ford Motor Company's assembly plant in Buffalo, N. Y. demanded additional shop air capacity. It had to be installed quickly and, if possible, without disruption to existing facilities.

Inasmuch as the installation was to be on the second floor of the power house, Ford engineers selected a Clark CMA-4, 350 horsepower, Balanced/Opposed Compressor. The low installation cost was an important factor.

With the Clark motor-driven unit, it was unnecessary to run foundations all the way down to the basement. Piping, which was beneath the proposed compressor location, did not have to be moved.

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. . . nor was there any lost production. The Clark unit was tied in over a weekend.

The Buffalo assembly plant is but one of many Clark Compressor installations serving the Ford Motor Company's vast operations.

Before you consider any proposed compressor location *impossible*, it may save you money to talk it over with your nearest Clark representative. In the meanwhile, make sure you have Bulletin 118 in your files. Write today.

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PRECISION BY THE TON **CLARK** **balanced/opposed compressors**

150-4500 HP

ricator than either alloy steels or stainless steels. Since the fabrication characteristics of 18-8 type stainless steels have been fairly well documented, it is a common practice to compare the high temperature alloys to stainless steels when considering the various fabrication methods.

Welding—All of the high temperature alloys can be fusion welded satisfactorily. Heliarc welding is best for most of the alloys because this process offers the least chance of contamination by carbon and oxides. The use of flux coated rods or liquid or paste fluxes introduces the problem of complete flux removal prior to elevated temperature service. The finish configuration of welds, especially in sheet material, has a great effect on the performance at elevated temperatures. For this reason, the optimum welded joint is a tight butt weld made automatically by the heliarc method adding no filler metal and roll leveling the resultant bead. Roll leveling mechanically forces the weld metal into the plane of the base metal producing a flush, stress relieved, cold worked joint.

Resistance welded joints are readily made using somewhat greater pressures than are necessary for stainless.

Forming—High temperature alloys can be formed by all of the commonly used forming techniques. They tend to work harden rapidly and require roughly twice the number of intermediate anneals as stainless steels. Minimum bend radii are somewhat larger than those for stainless steels and provision must be made for greater springback. Annealing procedures are performed at temperatures above, generally 2000 F, requiring high temperature furnace equipment and special equipment for removing scale.

Machining—The high temperature alloys are all hard to machine. Some are harder than others. In general, the mixed and cobalt base materials are most difficult, the nickel base alloys next, and the iron base alloys the easiest to machine. A good value for estimating the speed of machining high temperature alloys is 1/3 to ½ the speed of stainless steels for all normal cutting operations, such as milling, drilling, shaping, etc.

Forging — Forging is possible on practically all the high temperature alloys. However, forging pressures must be higher and temperatures hotter than for stainless steels. Tolerances in the as-forged condition may not quite compare with those of stainless steel or alloy steel parts because of more difficult working conditions.

Casting—Many of the high temperature alloys are cast by several of the casting methods. When complicated parts are desired from hard to machine alloys like Haynes Stellite 21, 23, or 31, the parts are investment cash to finish shape. Turbine blades and afterburner nozzle segments are typical of parts that are cast to finish shape. Many of the cobalt base alloys are only fabricated by casting.

Scaling and Corrosion Resistance

As the service temperature of a part climbs to temperatures above 1500 F, scaling becomes an important factor in determining the choice of materials. In addition, the corrosion effects of hot combustion gases on burner components must be considered. The chromium content of a high temperature alloy is the best, but not the only, indication of scaling resistance. Chromium contents of 15-20 per cent in high temp alloys will result in scaling resistance up to 18-1900 F. As the chromium content is increased to the 25 per cent of AISI 310 stainless steel the free scaling temperature increases to 2200 F. At and above this tempera-

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Above dies were made with Ren-ite Die Surface Coat RP-3260 and Casting Epoxy RP-3200 materials.

Some of many Ren-ite uses: making master Keller models, spotting racks and duplications; model mock-ups, skin panels, nesting, checking, polishing, and welding fixtures; dies and prototypes, aircraft tools and fixtures, tubing and fittings.

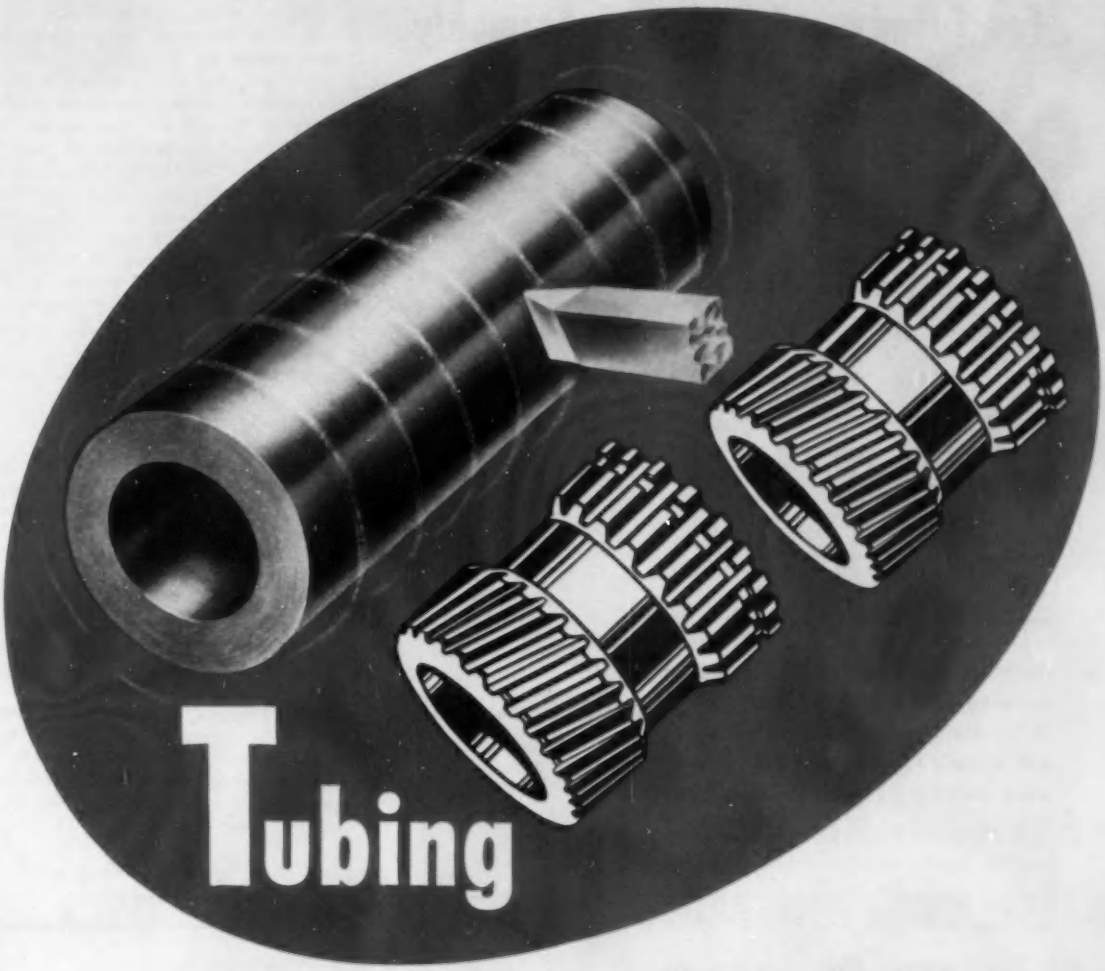
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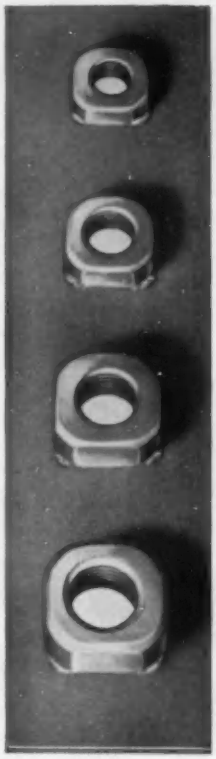
B&W SEAMLESS and WELDED TUBES

TA-4079(M)

For Speedy... Economical Assembly

SPECIFY MIDLAND Welding Nuts





Ideal for Hard-To-Get-At Places ...Will Not Work Loose or Rattle!

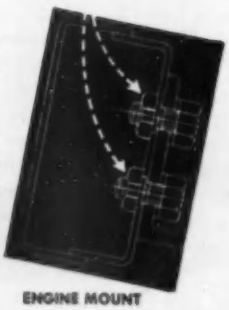
Whether you're designing a product or building it, the Midland Welding Nut is the answer to the problem of accurately and securely fastening metal parts into a main assembly . . . speedily, economically.

It is welded to the parts so that a bolt can be turned into it without the need for any device to hold it and keep it from turning.

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ture, all alloys have a decided scaling rate. However, since scaling is determined by temperature, atmosphere and time, the short service lives of guided missile powerplants enable parts to function for time periods up to hours at temperatures of 2000 F and higher. The service life expected of afterburners limits their top metal temperatures to about 1900 F. The much shorter service life of ramjet engines extends their top operating temperatures to 2000-2200 F. Probably the two best scaling resistance materials available today are type 310 stainless steel and Hastelloy X, primarily due to high chromium content.

Cost

The cost of most high temperature alloys is considerably above the cost of low service temperature alloy steels and stainless steels. The expensive alloying elements used in their composition and the special melting and mill practices necessary to produce high quality finished products contribute to the increased cost. However, the material needs of modern high operating temperature powerplants can only be satisfied by the high temperature alloys. Therefore, the cost is usually a minor consideration. The table shows a list of typical costs for some of the commonly used high temperature alloys compared to stainless steel and low alloy steels.

Typical Cost of Sheet Materials

Low Alloy Steels	
A1SL 1020	$.10/lb.
A1S1 4130	.20/lb.
Stainless Steels	
A1S1 302	.60/lb.
321	.75/lb.
310	.90/lb.
17-7 PH	.85/lb.
High Temperature Alloys	
L9-9DL	1.10/lb.
Multimet (N-155)	2.50/lb.
Hastelloy X	2.50/lb.
Inconel X	2.50/lb.
Hastelloy C	3.50/lb.
H.S. 25 (L-605)	5.50/lb.

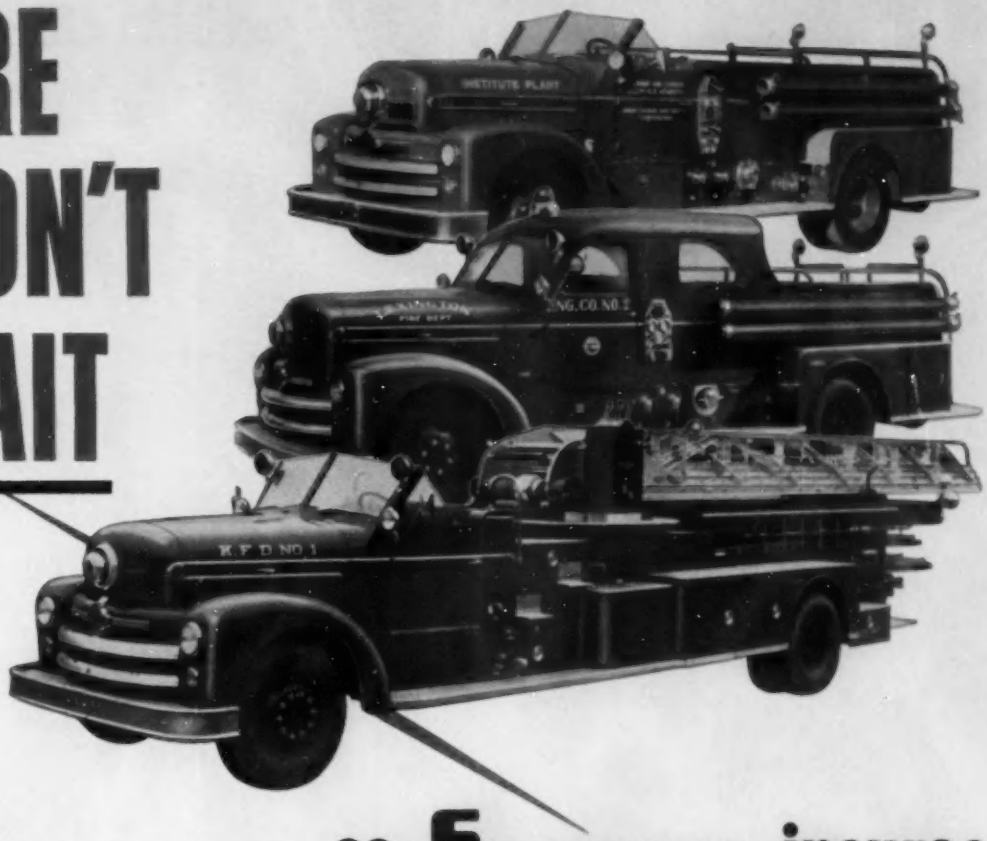
Limitations of Elevated Temperature Performance of Metals

Strength

Useable strength levels for high temperature alloys vary with the ap-

(*Turn to page* 384, *please*)

FIRE WON'T WAIT

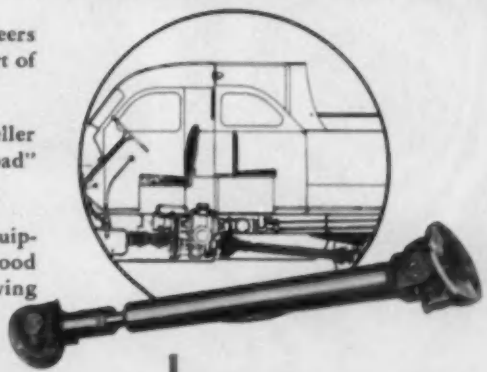


so Seagrave insures dependable power transmission with BLOOD BROTHERS propeller shafts

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HOW R/M ENGINEERING SETS

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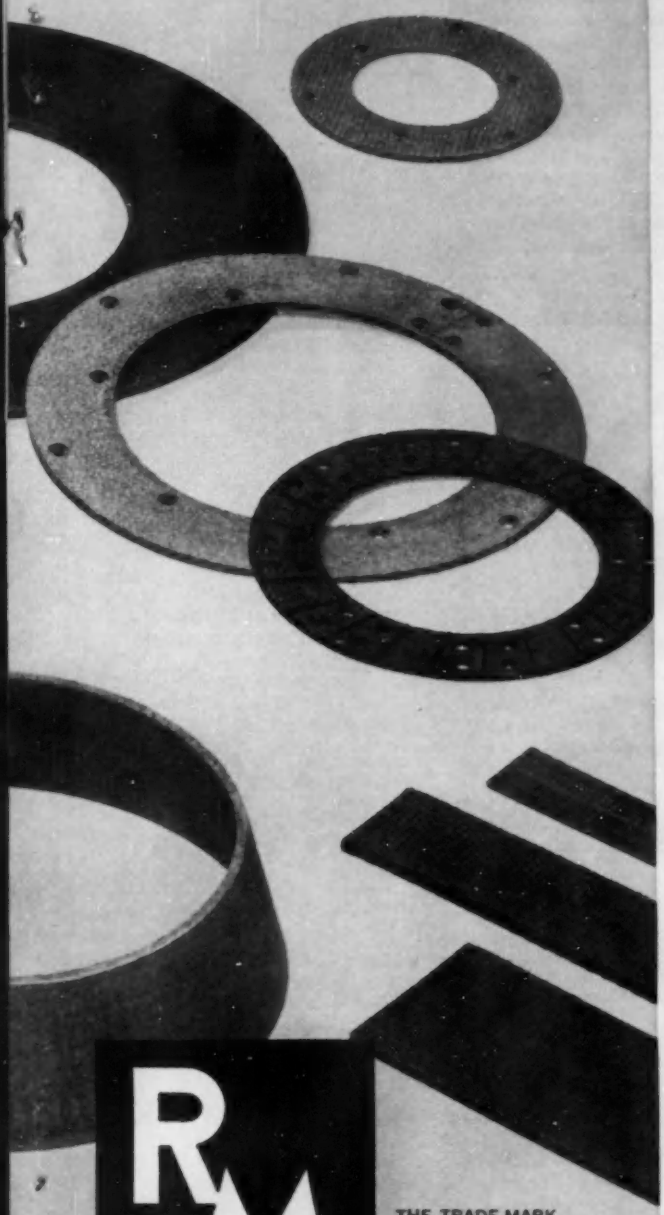


These are just a few of the friction parts—brake linings, clutch facings and automatic transmission bands—that R/M makes of woven asbestos.

THE RECORD OF "FIRSTS" IN FRICTION MATERIAL DEVELOPMENT SHOWS WHY R/M IS FIRST IN FRICTION

FIRST Woven Brake Lining • FIRST Asbestos Brake Lining • FIRST Ground Wearing Surface • FIRST Zinc Alloy Wire Brake Lining • FIRST Pre-Treated Yarns • FIRST Extruded Pulp Brake Lining • FIRST Flexible Pulp Brake Lining in Rolls • FIRST Dry Process Brake Lining • FIRST Semi-Metallic Brake Lining • FIRST Bonded-to-Metal Brake Lining • FIRST Woven Clutch Facings • FIRST Molded Asbestos Clutch Facings for Clutches Operating in Oil FIRST Endless Woven Clutch Facings • FIRST Pre-Treated Clutch Facings • FIRST Bonded-to-Metal Clutch Facings

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WOVEN BRAKE LININGS AND CLUTCH FACINGS

In either wet or dry operation, R/M Woven Asbestos Friction Materials offer specialized performance characteristics that could help solve problems you may be facing now.

No other material, for example, gives the same "feel" in automatic transmissions—or in passenger car brakes. No other material is as good for band brakes in oil well equipment. And R/M Woven Asbestos is now being used in applications as divergent as baby carriage brakes and fishing reel drags.

Raybestos-Manhattan, for over 50 years the world's largest maker of friction materials, has pioneered in the development of woven asbestos. R/M made the first woven brake lining—the first woven clutch facings. And continuous research and testing has given R/M a fund of knowledge concerning woven asbestos friction materials second to none in the industry.

By changing the mix ratio of asbestos and cotton, by using different yarn sizes and twists, and by variation of pretreatment and final treatment, R/M can produce in woven asbestos a range of friction characteristics that may well meet your requirements better than any other material.

In many applications, however, you will get best results by combining woven asbestos with other friction materials. Such combinations tend to keep the friction level more normal, since the different materials do not reach their critical points at the same time. And due to making all kinds of friction materials, R/M is in an ideal position to develop just the right combination for your needs.

R/M Works with All Kinds of Friction Materials

R/M offers the widest range of friction materials in the industry . . . from woven and molded asbestos to cork-cellulose, sintered metals, and ceramics. This is of major importance to the O.E.M. For it means that by consulting R/M, he can get the benefits of wider experience, and he can be sure of absolutely unbiased advice on which materials or combinations of materials are best suited to his individual application.

If you feel that friction material performance could be improved in any equipment you manufacture, contact Raybestos-Manhattan now. All the depth and breadth of R/M experience is as near as your telephone.

Write for your free copy of R/M Bulletin No. 500. Its 44 pages are loaded with practical design and engineering data on all R/M friction materials.



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High Temperature Materials

(*Continued from page* 380)

plication. For short time applications under low loads and a simple stress pattern, service temperatures as high at 2200 F have been considered for structural components of ramjet engines. In other applications such as high speed, long service life turbine blades, temperatures of 1600 F and lower are considered top temperatures today. Each application must be rated with respect to load, service time and other factors to determine a ceiling temperature of operation. Many times an alloy can be used for intermittant, short time service at temperatures considerably above the normal operating temperature. For these applications and ultra high temperature applications, it is important to know just how strength drops off with temperature. These data are just now becoming available. Work by Armour Institute, Haynes Stellite, and other organizations on short time properties of alloys and Battelle Memorial Institute on creep and stress rupture data down to 0.1 minute have been important contributions to missile power plant design.

Melting Point

Eventually, metals technology in the high temperature field is going to meet a formidable foe in the Periodic Table of Elements, see table below. Combustion temperatures using fuels known today are already in excess of the highest melting point metals. Most of the refractory metals with melting temperatures over 3000 F are brittle and susceptible to rapid oxidation. The melting point of the basic structural metal element, iron, is 2800 F. As alloying elements are added, this temperature becomes lower. Cobalt and nickel melt below 2800 F, their alloys melt down in the range 2400-2600 F. In general it can be stated that all of the present structural materials capable of unprotected operation at temperatures above 1500 F belt below 2700 F. To the combustion engineer, 2700 F is a low gas temperature.

MELTING POINTS OF SOME OF THE MORE COMMON METALLIC ELEMENTS

Boron	4200F
Chromium	3430
Cobalt	2723
Columbium	4380
Iron	2800
Manganese	2273
Molybdenum	4760
Nickel	2651
Palladium	2830
Platinum	3225
Rhenium	5740
Rhodium	3571
Tantalum	5425
Thorium	3300
Titanium	3300
Tungsten	6170
Uranium	2065
Vanadium	3150
Zirconium	3200

The present research efforts to produce ductile alloys of molybdenum, chromium, titanium, and zirconium for service at temperatures in excess of 2000 F is progressing slowly. The high melting points of these elements, all above 3000 F, are offset by lack of oxidation resistance, lack of strength, brittleness, production difficulties or fabrication difficulties. Molybdenum (m.p. = 4750 F) catastrophically oxidizes at about 1800 F, tends to produce brittle alloys and is very difficult to fabricate, especially weld. Titanium alloys (m.p. about 3100 F) presently produced drop off markedly in strength above about 1000 F and embrittle when exposed in air to temperatures above about 1400 F. Chromium and its alloys

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Shuts off one side of line

Gives quick connection and disconnection, with instant automatic flow or shut-off. To connect Coupling, and open line to flow of fluid, merely push Plug into Socket. To disconnect, a slight pull on sleeve releases Plug and shuts off supply end of line.



TWO-WAY SHUT-OFF
Shuts off both sides of line

To connect, pull back sleeve and push Plug into Socket. Identical torpedo type valves permit free flow of gas or liquid through Coupling. To disconnect, pull back sleeve . . . Coupling immediately disconnects, valves automatically seal both ends of line. Female pipe thread connections from ⅛" to 1". Available in brass or steel.

STRAIGHT-THROUGH COUPLING

Provides quick connection and disconnection, but does not have shut-off feature. Sizes, ranging from ¼" to 2½", carried in stock. Two special types of straight-through steam Couplings also available—one for low pressures, and one for high pressures.



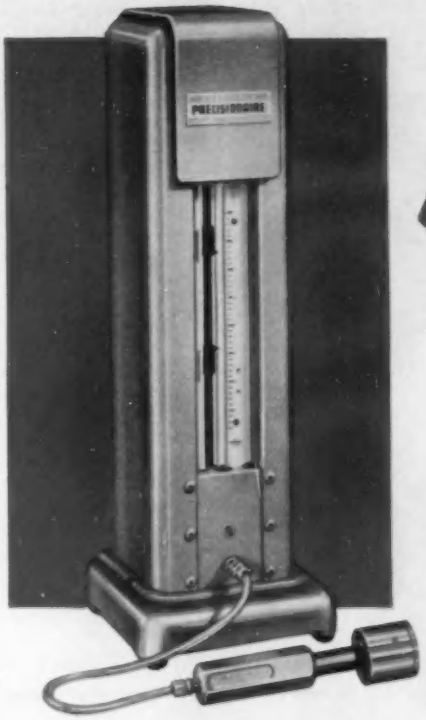
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For instance, should the .0005 tolerance of parts being checked with a 10,000 or 5,000 Column Instrument, be changed to .002, *a new instrument is not required.* Merely change over the Precisionaire with a 1,000 or 2,000 Conversion Kit in less than three minutes.

The Precisionaire Column Instrument is always usable this minute, an hour, a week, a month or a year from now, with any appropriate gaging elements, regardless of shifting tolerances, changes in processing and engineering and changeover from one part to another.

NO OTHER AIR GAGE HAS THIS IMMEDIATE FLEXIBILITY—*Precisionaire Column Instruments are always usable.* They are the most universal in use—and the most universally used.

Learn more about the spectacular versatility and economy of Precisionaires—call your Sheffield Representative or phone, wire or write Dayton for a showing of automatic sound slide films on air gaging—they can be shown on your desk.

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Here are versatile power, capacity and performance long needed in a compact, maneuverable fork lift truck. Find out how the new Towmotor Model 500 fork lift truck can meet *your* handling requirements . . . and turn *more* of your present handling costs into profit. For complete information, call or write your local Towmotor Representative, or TOWMOTOR CORPORATION, Div. 4503, 1226 E. 152nd St., Cleveland 10, Ohio.

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(m.p. about 3400 F) investigated to date are too brittle for structural applications.

While it is anticipated that molybdenum alloys will eventually be available that will have typical U.T.S. of 20,000 psi at 2400 F, much research work must still be done before these alloys become a true reality.

Most of the other high temperature melting point metals are so brittle or susceptible to scaling or both that development work on structural alloys of tungsten, rhenium, tantalum and other high m.p. elements for high temperature service is non-existent. Therefore, it can be stated that we are nearing the ultimate in high temperature structural metals at service temperatures considerably below the combustion gas temperature known today. Cermets and refractory hand metals (silicides) borides, carbides, nitrides, etc.) seem to be the principal hope of the future.

Applications in Turbojet Afterburners

Afterburners are presently being used in conjunction with turbojet engines to obtain additional thrust during take-off and at other times when it is deemed necessary for short periods. Fundamentally, an afterburner is a device that injects additional fuel into the exhaust of the turbojet to use up the unused oxygen present. As such, it is composed of a fuel injector, a flameholding device, a combustion chamber and a variable area exit nozzle. The present Air Force specification for afterburners specifies that each model pass a qualification test consisting of 150 hours of operation including 22 hours of afterburning.

COMBUSTION CHAMBERS

The combustion chamber of a typical afterburner is either a single wall or double wall cylinder of a high temperature alloy sheet material usually less than 0.1-in. thick. Dimensions range from 60-120 in. long and from 32-42 in. in diameter. During afterburner operation the wall temperature of a single wall chamber reaches temperatures from 1500 F to 1650 F in the burning area. The service life and loads require that a material such as N-155 be used in the forward regions and L-605 material in the exit area. These materials, in thicknesses ranging from 0.050-0.070 in. are rolled into cylinders or cones and fusion welded together. Welds must be near flush to prevent hot spots from forming

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due to weld bead projection into the hot combustion gases.

Double wall chambers are usually corrugated to allow cooling air to pass between them. Several double wall chamber designs have been fabricated from Inconel W or X. These materials have high strengths at the service temperatures (1300 F for the outer wall, 16-1800 F for the inner wall). Relatively high final aging temperatures and times required to put these alloys into their maximum strength condition create a heat treating production problem because the chambers are comparatively large. Fabricating the corrugations in these alloys is also a production problem. However, at the service temperatures, comparatively thin metal thicknesses can be used, resulting in a minimum weight chamber.

FLAMEHOLDERS

The flameholders of afterburners are subjected to the highest service temperatures in the unit, reaching temperatures during afterburning of 1800-1900 F at and near the flame step. Problems of differential heating inducing thermal stresses, radiation from one surface to another building up temperature, and high collapsing pressures for the service temperatures all tend to cause premature failure unless some cooling method is incorporated in the design.

A typical afterburner flameholder consists of two developed surface truncated sheet metal cones with a flame step between them. The large cone is fabricated from 0.505 in. N-155. The smaller inner cone is fabricated from 310 stainless steel. The cones are spun or rolled into shape and fusion welded together. The flame step is the hottest area of the flameholder and the point where scaling and differential thermal expansion resulting in high thermal stresses are critical design considerations. Present practice is to machine the step from a 310 stainless steel rolled ring forging into an annular cup shape to reduce thermal stresses. Cooling air from the turbine exhaust (at 1200 F) is passed along the inside walls of the sheet metal cones to keep them cool and at a more uniform temperature. The use of Hastelloy X is being considered for present 310 stainless steel components of flameholders to take advantage of its greater strength at temperatures around 2000 F and equal scaling resistance to the 25 per cent chromium type 310.

FUEL SPRAY BARS

Fuel is introduced into an afterburner thru a series of single or multiholed radial fuel spray bars placed upstream from the flameholder. These bars consist of 321, 310, stainless steel, or N-155 tubes about 0.060 in. wall thickness and 10 in. long that have been flattened into an elliptical shape. Small holes are drilled in the tube wall thru the small diameter of the ellipse. These holes usually range in diameter from 0.025 in. to 0.062 in. to produce the proper dispersion of the fuel in the air stream. Drilling small diameter holes in high temperature alloys thru a small radius surface that has been work hardened is almost a science in itself. Methods for drilling these holes using high speed steel drills have been developed. Ultrasonic and electronic methods of drilling small diameter holes in hard to machine alloys have also been tried. The tubes are welded or nicrobrazed (a process using a high melting temperature nickel-boron brazing alloy in a hydrogen atmosphere furnace) to a central manifolding system.

The service conditions imposed upon the fuel spray bars are the exact opposite of those of any other com-

(*Turn to page 393, please*)



KEEP POWER SHOVELS from "Running a Temperature"!

DOING the rugged work of maintaining and grading roads such as this heavy-duty Power Shovel is called upon to handle day after day could easily make its power unit "run a temperature". But with dependable YA Radiator equipment for efficient cooling it steps right out whenever called upon. Perhaps you, too, are building equipment that could well use YA Radiators — write Yates-American for complete information.

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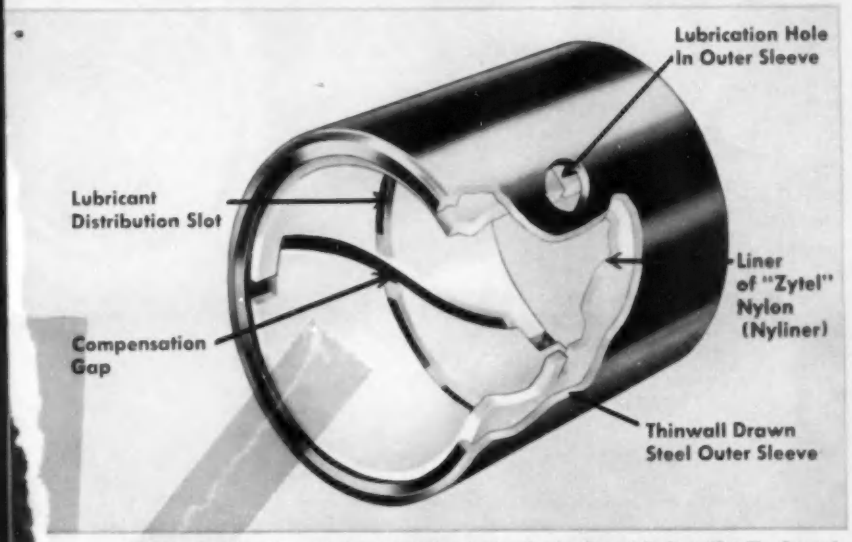
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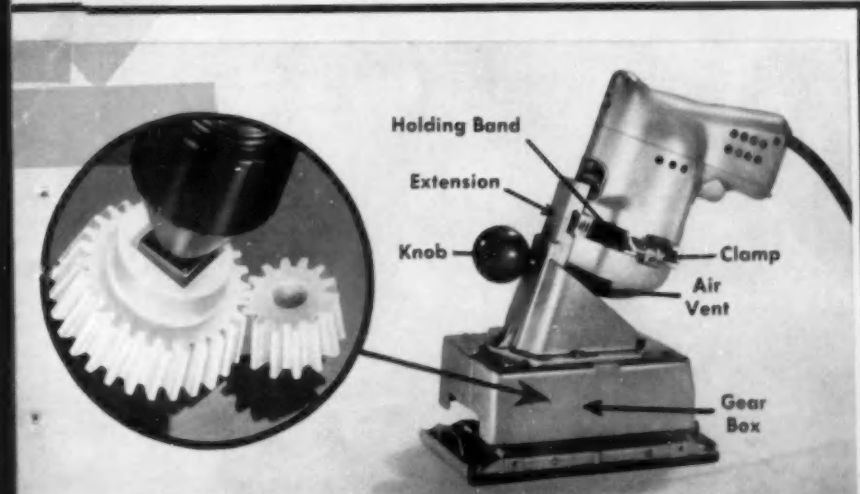
AUTOMOTIVE ENGINEERING NEWS

NO. 2 — 1955

Free-Floating Liner of Du Pont "Zytel"* Nylon Gives Bearing Unique Advantages



This bearing has a thinwall sleeve of steel and a free-floating liner of Du Pont "Zytel" nylon resin for superior abrasion-resistance, resiliency, strength, corrosion-resistance and lightness of weight. Manufactured by Thomson Industries, Inc., Manhasset, New York. This construction is protected by United States Letter Patent 2,675,283.



Sander and polisher, manufactured by Du-Fast, Inc., New York City, uses abrasion-resistant, economically produced gears of Du Pont "Zytel" nylon resin. "Zytel" is resilient—damps vibration. It eliminates the need for extremely close dimensional tolerances necessary with metal gears. There is also a substantial weight-saving with "Zytel"—yet this engineering material is tough with high impact strength. Gears are molded by Brilhart Plastics Sales Corporation, Mineola, New York.

Lower friction, greater resiliency, quieter operation with "Zytel"

By developing a bearing with a free-floating liner of Du Pont "Zytel" nylon resin, Thomson Industries, Inc., has opened another design field for the automotive engineer. The Nylined bearing (see picture at left) combines lower friction, resiliency to resist pound-out, superior corrosion resistance and almost silent operation. It is lightweight and in many cases needs no lubrication.

Abrasion and Heat Resistance

"Zytel" has a tough, slightly yielding surface that suffers little wear over long periods. Its load capacity is excellent. "Zytel" will take exposure to temperatures to 250°F.

Under light loads "Zytel" can be used without lubrication. If the load and speed generate heat over 250°F. at the bearing surface, some lubrication is needed on the Nylined bearing, but "Zytel" will usually give longer life than other materials under imperfect lubricating conditions. Often lubrication requirements are satisfied by having the bearing run in contact with water, gasoline or other liquids.

Strength and Other Advantages

The tensile strength of "Zytel" is 10,990 psi, its shear strength 9,600 psi, and flexural strength 14,600 psi. Nylined bearings are not vulnerable to internal stresses within the material. "Zytel" is extremely quiet in operation, damping vibrations in the audible spectrum and frequently preventing vibration transmission to component parts. Du Pont "Zytel" is also corrosion-resistant to most weak acids and solvents. Lubricants are not affected by "Zytel" in the Underwood test of SAE.

More Information Available

This bearing of Du Pont "Zytel" nylon resin is proving its superior working advantages in many applications that require precision fits, long service life and

(*Continued next page, column 3*)

OVER

*"Zytel" is the new trade-mark for Du Pont nylon resin.

DU PONT

AUTOMOTIVE ENGINEERING NEWS

PROPERTY AND APPLICATION DATA ON THESE VERSATILE ENGINEERING MATERIALS: "ZYTEL," "ALATHON," "TEFLON," "LUCITE."

NO. 2 — 1955



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Du Pont "Teflon" tetrafluoroethylene resin is useful where extremely low friction is necessary, or where lubrication cannot be tolerated—for certain types of sleeve bearings, for example. Because "Teflon" is self-lubricating, a shaft used with a bearing of "Teflon" does not have to be mirror-finished, although finishes on the order of RMS = 15 are recommended. Its almost complete chemical inertness—even at elevated temperatures and pressures—makes molded "Teflon" a superior material for all types and sizes of pipe and tubing, gaskets, valve and pump components. Electrical insulation of "Teflon" is suggested where very low power loss is necessary or where there is exposure to elevated temperatures or lubricants.

There are many potential automotive applications for Du Pont "Teflon."

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Polychemicals Department
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Please send me more information on the Du Pont engineering materials checked: ☐ *"Zytel"*; ☐ *"Alathon"*; ☐ *"Teflon"*; ☐ *"Lucite". I am interested in evaluating these materials for:*

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*"Alathon", "Lucite", "Teflon" are registered trade-marks of E. I. du Pont de Nemours & Co. (Inc.)
†"Zytel" is the new trade-mark for Du Pont nylon resin.

Valve poppets of "Zytel" solve problem of inertia in low-pressure gas compressor valve

A West Coast manufacturer reports superior performance of valve poppets molded of "Zytel" nylon resin in compressors which handle air, ammonia, butane, propane, and natural gas. These poppets are used where the pressure is less than 1,000 psi and the temperature below 280°F.

In this low-pressure range, the weight of poppets formerly used set up inertia forces which impaired valve efficiency. To overcome this, a test set of poppets molded of "Zytel" nylon resin were installed in a natural gas compressor operating at 300 rpm with 840 psi discharge pressure. *After 2 years of continuous operation involving 300,000,000 open-and-close cycles, the poppets of "Zytel" showed no sign of wear.*

Because of its strength, combined with lightness of weight, Du Pont "Zytel" nylon resin (1) solves the inertia problem, (2) reduces valve-opening shock load which lengthens coil spring life, (3) lessens pounding force on the valve body seat and other poppet-enclosure areas, and provides quieter operation than did poppets formerly used.

Du Pont "Zytel" nylon resin is used without danger of corrosion in the presence of ammonia, butane, and similar gases.

These valve poppets of "Zytel" are economically made by injection molding. By this method, parts can be made quickly, to close tolerance, and generally require no finishing operation.

Free-floating liner of Du Pont "Zytel" gives bearing unique advantages

(Continued from front page)

economy of production. For example, this bearing is used on the new revolving refrigerator shelves. For complete information on "Zytel"—its properties and applications—use the coupon.


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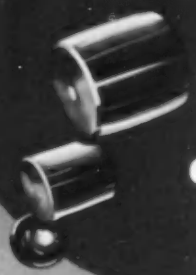
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Red Seals, of DuPont "Fairprene", team with a rotating flinger to exclude dirt and retain lubricant. The "SY" Pillow Block is easy to mount—just slide unit on shaft, tighten two set screws. And the "SY" is interchangeable with existing installations.



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THSD-A
FORM 410

See idea for design engineers on other side.

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BALL AND ROLLER BEARINGS

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High Temperature Materials

(*Continued from page* 388)

ponent of the afterburner. When the afterburner is not operating, the turbine exhaust temperature keeps the fuel spray bars at 12-1400 F. The moment fuel is introduced into the afterburner, the wall temperature of the fuel spray bars drops to 100-200 F. This condition of thermal shock must be considered when the bars are designed, especially at the junction of the bar and the fuel manifold.

EXIT NOZZLES

The segmental, iris type of exit nozzle design has been one of the more fundamental advances of afterburner design from its beginning back at the end of World War II. A variable type nozzle is required to provide the optimum exit area for the operation of the turbojet alone and of the turbojet and afterburner in combination. When the afterburner is operating, the exit area must be greater than when the turbojet is operating alone.

The segments of an afterburner nozzle must be capable of withstanding high operating temperatures of 1800-1900 F with local hot spots reaching 2000 F; of resisting oxidation by hot combustion gases; and of withstanding loads that can warp the individual segments out of line with their neighbors and thereby affect the operation of the nozzle as a whole. The segments are investment casting of type 310 stainless steel. This is used primarily because of its high scaling resistance. They are hinged at one end and fit into a hinge ring that is connected to the combustion chamber. The segments are operated by the action of a shroud that moves fore and aft along the outside of the combustion chamber, pivoting the segments from the hinge ring into a smaller or larger diameter exit area.

At one stage in the development of these segments, the edge of each segment overlapped that of its neighbor to prevent pressure loss thru the nozzle. The differential temperatures set up by its configuration caused warping and cracking of the overlapped edge. The latest designs do not overlap the segments themselves. Instead, an overlapping sheet metal section of L-605 alloy is placed between each segment to prevent leakage. The L-605 is ceramic coated to prevent galling and to reduce scaling due to

(*Turn to page* 396, *please*)

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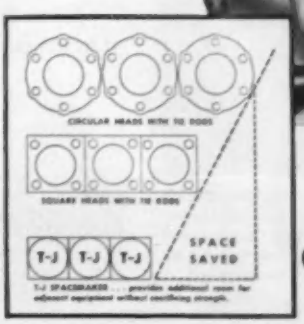
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Brake	Blank
Press	Cut
Spin	Broach
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The power-takeoff shafts on the self-propelled Minneapolis-Moline Harvestor carry a heavy load. Requirements called for a minimum-yield strength of 100,000 p.s.i. It was necessary that these shafts consistently meet minimum requirements in order to eliminate or to minimize failure in service.

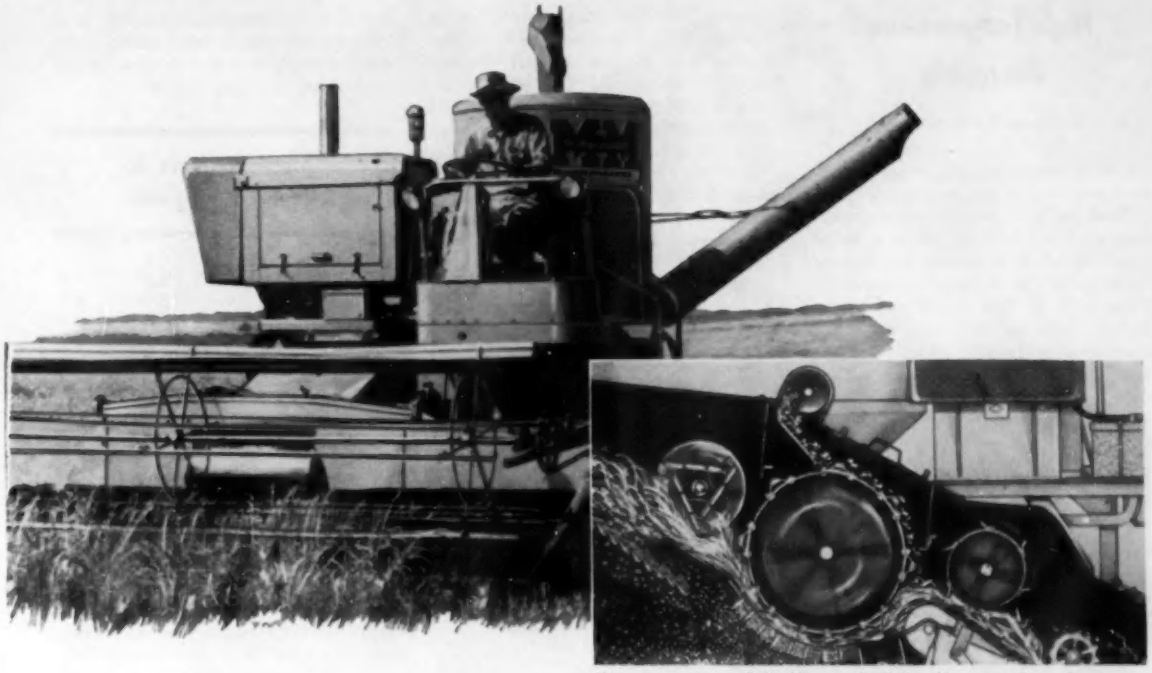
In addition, material that had to be stress-relieved, straightened and precision-ground was expensive.

Republic's Field Service Specialists were invited to work on this problem with Minneapolis-Moline Engineers. The solution was a switch to Republic C-1050 Cold Drawn Steel.

Now, the company is getting the proper physicals needed to do the job. And, costs

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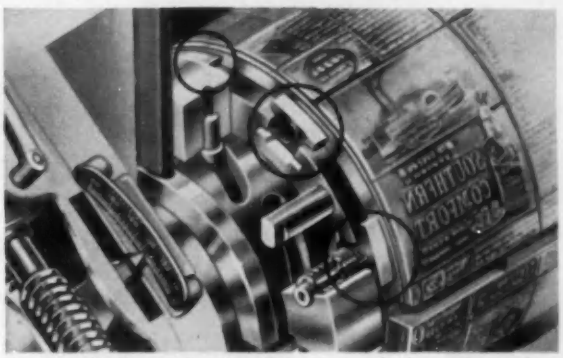


This cutaway view of the Minneapolis-Moline Harvestor shows the power-takeoff shafts made from Republic Cold Drawn Steel.

have been reduced approximately 35 to 40% since the switch to Republic C-1050 Cold Drawn. They buy the shafting in four-foot lengths. The only finishing operations necessary are: threading the ends, key-seating the shaft, and centerless grinding the bearing areas to close tolerances.

Naturally, not all cold finished steel requirements are the same. To make sure that you get the most out of the Republic Cold Drawn Steels you buy, Republic provides a full-time field service staffed by expert metallurgists and machining specialists. They will visit your plant, work with your staff on solving cost and production problems.

Call your nearby Republic sales office for the facts. Or mail the coupon.



Steel parts, like these printing-plate clip bars, are made at a great saving from Republic Special Sections. The bars are cold drawn to predominating cross section of the part. Cold drawing gives your steel parts higher strength, greater hardness and a bright smooth finish. Cutting to length and drilling are often the only operations necessary to finish the part. Sections can be produced in a wide variety of analyses with contour variation almost limitless.

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K-3051A

High Temperature Materials

(*Continued from page 393*)

the high service temperatures and direct combustion gas impingement.

Most of the earlier afterburners had a clam shell or eyelid type of sheet metal exit nozzle constructed from N-155 or a similar material. Many of the high production afterburners of today still use the eyelid type nozzle. In the open or afterburning position, the nozzle is at 1800-1900 F. In the closed position, the nozzle is at turbine exhaust temperature, 1200-1400 F. The eyelids rotate on bearings that have been moved far enough away from the high temperature area to function reliably.

Under operating conditions, the bulbous shape of the nozzle wants to open up from its fabricated shape. To prevent this, a comparatively heavy box type structure must be built on the side of the nozzle components away from the flame to keep them round. This structure is costly in weight, fabrication time, and functional design considerations. For these reasons, the eyelid type nozzle is being replaced in newer designs by the segmental, iris type nozzles.

Applications in Ramjet Engines

Ramjet engines are an air breathing jet engine that essentially contain no moving parts. The principle of operation is the same as that for any other air breathing jet engine, i.e., compress the air, introduce fuel into the compressed air, burn the mixture and exhaust the combustion gases in a manner that produces a net forward thrust reaction. Actually, the ramjet can be roughly compared to a turbojet engine in the following manner:

The ramjet engine depends upon its forward motion and the configuration of its inlet or diffuser to sufficiently compress the incoming air. To do this in a turbojet requires a compressor. The compressed air is now driven back into the fuel injection area and fuel is sprayed into it. From here the fuel air mixture enters the combustion chamber where combustion occurs. The combustion chamber corresponds to the combustion chambers in a turbojet engine. The hot combustion gases are then exhausted out thru the exit nozzle. The differences are these: Since the ramjet does not need a compressor to compress the gases, it does not need a turbine to drive the compressor nor a compressor drive shaft which necessitates placing several small combustion cans about the shaft instead of using a single large diameter combustion chamber. Therefore, all that is left in the ramjet in common with the turbojet is an inlet, a fuel injector and a combustion chamber. In addition, there is a flameholder mechanism in a ramjet which creates a turbulence in the air stream within the combustion chamber such that it will support combustion. While this description is a layman's description of the ramjet engine, it does give one a quick picture of the basic principles of operation.

The ramjet engine cannot produce static thrust. The principle of compression by ramming air into the engine requires that some mechanism of boost be used to get the vehicle moving thru the air at speeds sufficient for it to sustain burning with useable thrust. For optimum engine performance the versatility of this type of propulsion system is limited to a specific range of speeds and alti-



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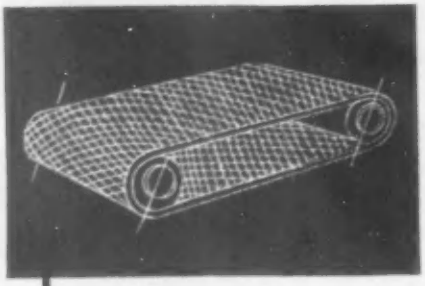
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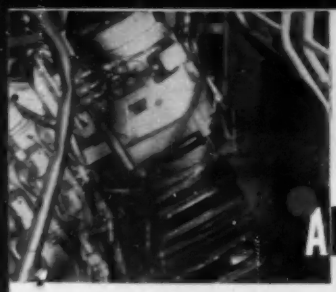
tudes for which it has been designed. Ramjet propulsion is used in the guided missile field where rocket boost is usually used to initially accelerate the vehicle. In the field of guided missile powerplants, the ramjet engine performs an essential job providing the most economical means of propulsion to several types of missiles for intermediate and long range applications at intermediate Mach numbers and altitudes. It occupies a niche all its own between the capabilities and limitations of turbojets on the low speed and altitude side and rockets on the high speed and altitude side. It is particularly suited for single shot missile applications because of its constructional simplicity and low fabrication costs. Its thrust to weight ratio of approximately 20 to 1 is also a salient feature.

The only components of ramjet engines that operate at service temperatures in excess of 1200 F are the flameholder, the combustion chamber and the exit nozzle. The flameholders may be of two types, a gutter type of a can type.

The gutter type flameholders consist of radial and/or annular "V" shape gutters fabricated from 321 stainless steel sheet up to ⅛ in. thick and painted with a fire resistant, inorganic base paint called pyrochrome. Type 321 stainless steel is used primarily because of its availability. As flameholder design is refined, considerable advantage will be taken of higher strength alloys to reduce weight. The operating temperatures are high, reaching 1800-1900 F during normal operation at the gutters. However, slight variations in performance that result in flame impingement on the flameholder components can result in actual burning of the edges of the gutters at temperatures considerably above 2000 F. This occurrence is not detrimental to the functioning of the engine as it is a momentary action if and when it occurs.

There are several types of loading imposed upon the various parts of the flameholder. High thermal stresses are induced by large temperature differentials from the flame side to the back side of the gutters. This is due to combustion gas at 3500 F radiating heat to one side of the gutters and cooling diffuser air at 600-800 F hitting the opposite side of the gutter. In addition, a high differential pressure across the "V" gutter tends to collapse the "V" cross section of the gutter. Suspension of the unit in the center of the engine aft of the diffuser exposes it to extreme vibra-

(*Turn to page* 403, *please*)



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DOES THE JOB 22 TIMES FASTER

Machining mounting surfaces on the underside of huge tank hulls required ten separate horizontal boring mill setups. Handling, positioning and working on the heavy, unwieldy hulls created a serious bottleneck in production.

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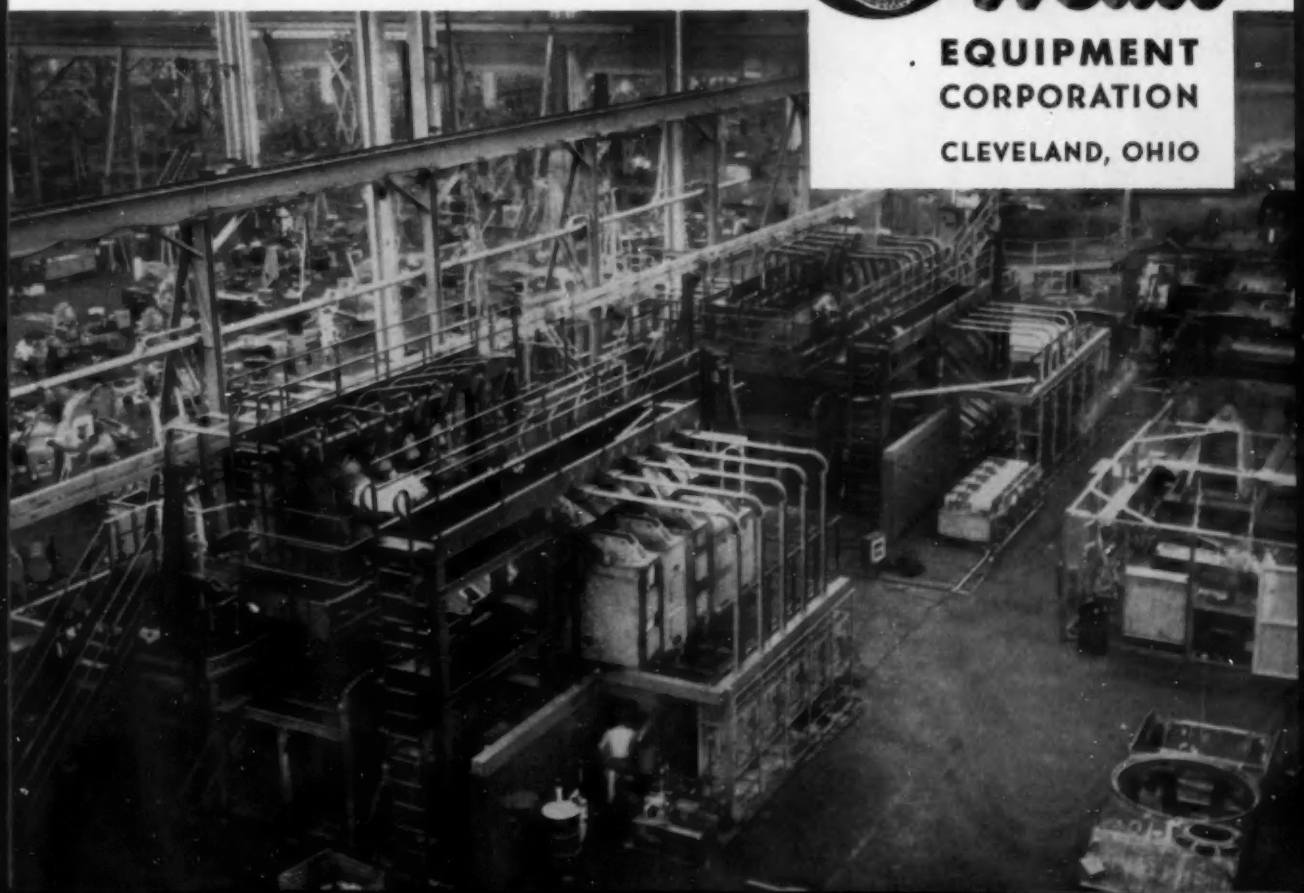
The machine grinds all surfaces simultaneously with unmatched precision, and completes its job 22 times faster than the old method. According to company officials the machine paid for itself in short order by increasing production, eliminating reworking created by human error, and releasing boring mills to other production work. Result: A second machine to perform a difficult drilling operation on the same hull was ordered from Wean. These are typical examples of Wean Equipment's ability to develop and build practical automation equipment.

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FINGER-TIP CONTROL. Simple hand dial adjusts volume. Volume is maintained by MULTIPUMP regardless of variations in pressure and pump speed.

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COMPACT. Takes less space . . . weighs less than other variable volume pumps of equal capacity.

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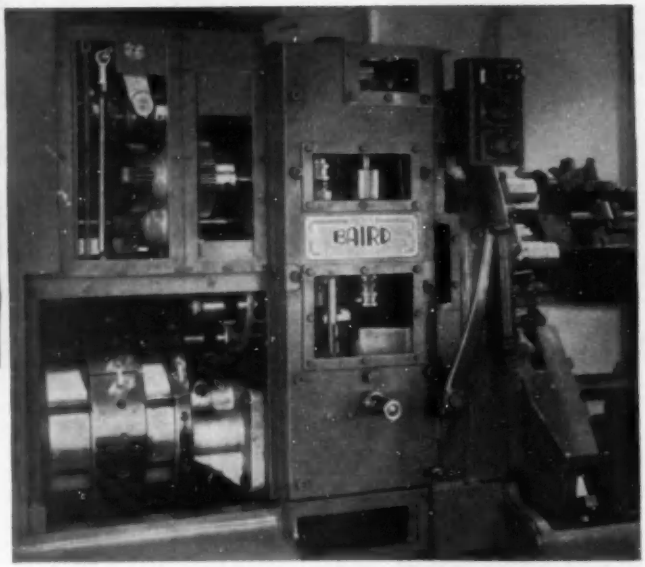
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IBA 54

High Temperature Materials

(*Continued from page 398*)

tion loads generated by the combustion process.

The gutter type flameholders are fabricated from sheet metal formed into shape and joined by fusion and resistance welding, riveting and bolting. At the forward side of the flameholder is a conical pilot can of 321 stainless steel that contains the ignition system of the engine.

The can type flameholder is a truncated cone several feet long in a standard engine that varies from a diameter of about one foot to a diameter approaching the diameter of the engine (up to approx. three foot diameter). The cone contains holes of various sizes along its length ranging up to several inches in diameter. The diffuser air passes thru these holes to the inside of the can where burning takes place. At the small diameter (upstream) end of the can, the pilot can is attached that contains the ignition system. The pilot can may be truncated cone or a cylinder with a semi-spherical head.

The high operating temperatures of both the pilot can and the perforated main can, which may reach temperatures over 2000 F in service, necessitate the use of a high scale resistant material. For this application, type 310 stainless steel and Hastelloy X have been considered. The high chromium content of both materials makes them highly scale resistant. The service loads on the can are collapsing loads for which the conical shape of the can provides maximum resistance. The high "E" or modulus of elasticity of these materials also helps resist collapsing loads. In the hotter areas of the can, 0.125 in. thick material is used to resist collapsing.

The holes are punched in the sheet metal before it is rolled into a conical shape and fusion welded. The finishing of the holes is an important operation. Improper hole finishing may result in elevated temperature radial fatigue cracks. The cans are painted with Pyrochrome paint to reduce oxidation.

The combustion chamber of a ramjet engine is a cantilevered, large diameter, thin wall cylinder that protrudes aft several feet beyond its junction point with the diffuser. The combustion chamber and integral exit nozzle together with the flameholder accounts for approximately half the weight of the entire engine and com-

Specify *Michigan* Tubing for Automobile Parts



This gasoline tank filler tube has the overflow pipe brazed to the filler tube at two points and the fastener clamps projection welded to the tube. The cam is spot welded to the tube mouth.



Ready for the automobile assembly line is this steering jacket, a vital volume produced tubular part of a major control unit, manufactured by Michigan.



The muffler inlet pipe above shows how Michigan workmanship performs several intricate fabricating operations to most exacting tolerances.



Fabrication by Michigan of this horn tube, which has a diameter variation of 51 per cent, is another example of the workability of Michigan tubing and of Michigan engineering competence.

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pose the combustion temperature limiting components in ramjet engines. The chamber is, essentially, a thin wall pressure vessel that is subject to varying pressures and cantilever loads that create large vibrations and fluctuations of the skin material.

The chamber is fabricated from 0.050-0.078 in. thick N-155 alloy into cylinders as large as 35 in. in diameter and eight feet long. The exit nozzle portion of the chamber is formed from 0.078 in. sheet and is an integral, unfaired portion of the chamber. The service temperatures reach 1850-1950 F with local hot spots and the area at the nozzle throat reaching short time temperatures up to 2200 F. The forward section where the chamber is bolted to the diffuser only reaches temperatures of about 1000-1200 F.

The fabrication of the chamber involves rolling and welding of cylinders and cones. The contoured sections forming the nozzle area are made on an expanding mandrel. The welds are a critical part of the assembly. Welds are made using heliarc welding with no addition of filler rod. The completed joint is roll leveled to produce a flush, stress relieved joint that will stand up at the high operating temperatures. The outside surface of the chamber is treated in a molten sodium dichromate bath to produce a black, high surface emissivity coating. No protection is given to the inside surface of the chamber.

It has been found that the carbide precipitation characteristics of the N-155 alloy used in the combustion chamber are an excellent indication of the top temperature the metal in a particular area of the combustion chamber has been subjected to. This tool has been very valuable in failure analysis work during the development of this chamber. Between the temperatures of 1800 and 2300 F and for the service times involved in ramjet engines (of the order of several minutes) a precipitation of carbide occurs in the grain boundaries of N-155 that will pinpoint the temperature within 25-50 F.

The chamber is cooled by the connection of cool air along the outside surface in flight and by radiation of heat from the outside surface to the sky. For these reasons, the change in section near the throat cannot be made too severe or air layer separation will occur and the convective cooling will be lost. The radiation cooling is enhanced by the black, high emissivity coating on the outside surface.

Applications in Rockets

The use of metals in rockets at service temperatures above 1000 F and below the mp of the metal is usually limited to three classes of rockets. These are: liquid propellant rockets whose service life is 0 to 4 sec, solid propellant rockets and regeneratively cooled rockets with service lives of many seconds to a minute and over. Uncooled rockets with intermediate service lives make use of ceramic materials to withstand the combustion temperatures. The rocket components which operate at elevated temperatures caused by the combustion process are the combustion chamber liner and the exit nozzle.

Mild steel and 4130 alloy steel are used for the combustion chamber area of short life rockets. The rate of deterioration of these materials is calculated to be slow enough for the rocket life. The chambers are rolled up plate that is welded and machined to form. The steel is painted to prevent rusting prior to service. Alloy or mild steels are used in these appli-



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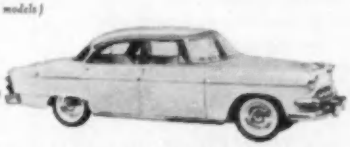
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DODGE ROYAL FOUR-DOOR SEDAN (also hard-top convertible)

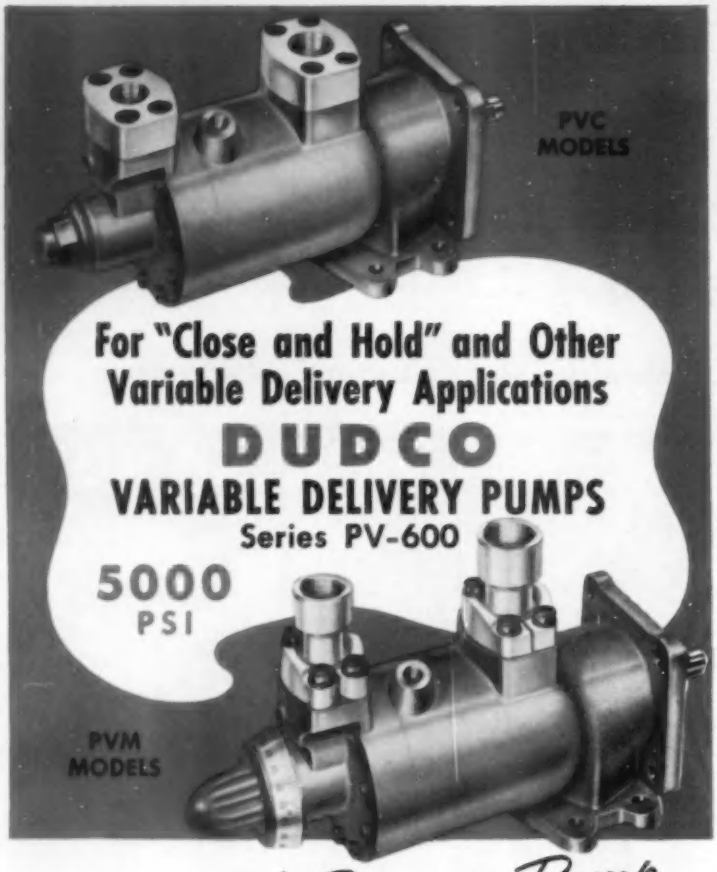
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cations rather than a high temperature alloy primarily because the combustion temperature in rocket engines are so much in excess of the melting temperatures of all constructional metals that the use of any metal is strictly a function of amount of deterioration in the service life.

Rocket engines that must operate for times of the order of a minute require some method of drastically cooling the walls of the chamber that contains the combustion reaction. Even ceramic materials will deteriorate excessively under the operating conditions if uncooled. Therefore, double wall rocket chambers are fabricated by one of several methods and the rocket fuel is passed thru the area between the walls to cool the inner wall before it is introduced into the chamber to be burned.

Typical construction consists of an inner liner wall of ⅛ in. "A" nickel for its good thermal conductivity or mild steel or 4130 steel and an exit nozzle wall of 3/16 in. of the same materials. The cooling action keeps the liner and nozzle wall surfaces between 1200 and 1500 F for the expected service life. Again, it is seen that the tendency is to use a high conductivity material or low alloy steel rather than a high temperature alloy. It can also be seen that the weight of a unit area of wall is not as critical as it is in afterburners and ramjets where 0.050-0.070 in. thick combustion chamber materials must be used to reduce weight. The relative size is an important factor here. Rockets are usually smaller in diameter and length than are afterburners and ramjets.

Solid propellant rockets are usually of short burning duration and are so designed that the fuel is burned from the center out to the liner wall, thus keeping the wall as cool as possible. Typical solid propellant liners and exit nozzles are rolled or forged cylinders of mild steel of 130 machined to shape. Fiberglass laminates have even been used in a short time application.

Conclusion

The field of high temperature metals for applications in afterburners, ramjet engines and rockets is rapidly being pushed to the limit of present constructional metal performance. Operating a ramjet engine with hotspots at 2200-2300 F is operating within 200-300 F of the melting temperatures of the best high temperature alloys. The ramjet designer must look forward to molybdenum, ceramic coatings, or the cermets for future ma-

terials to fulfill ever increasing combustion temperatures. The place for the known materials of construction in the combustion component picture has been set. We will have to await new material developments and/or resort to cooling methods if advantage is to be taken of higher combustion temperatures to attain greater performance.

AIRBRIEFS

(*Continued from page* 362)

Since 1950, there has been a steady decrease in the number of technical graduates from U. S. schools which has now leveled off at less than half the 1950 figure. This alarming decline has occurred at a time when advances in technology have imposed mounting requirements for technical personnel in industry and national defense.

The need for engineers, scientists and technicians has been particularly serious in aviation, where research and development demands have multiplied at an almost unbelievable rate, and where design and production have become infinitely complex operations.

Because the aircraft industry is the backbone of our air power, the present and prospective future shortages of skilled personnel in this industry constitute a grave threat to our continuing air leadership.

As a matter of national policy, the United States has embarked upon an air power program designed to assure qualitative superiority over an indefinite period of years. Reliance will be placed upon our possession of *better* air power, more *effective* air power, rather than upon vast numbers of aircraft.

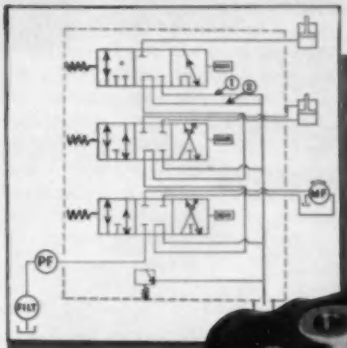
It is obvious that this effort to maintain our qualitative superiority in the air will require the efforts of tremendous numbers of scientists and engineers. We face many problems involved in the design and production of aircraft which will, in the not too distant future, fly and fight at multiples of the speed of sound. There are problems of heat, of control, of materials, of electronics, and many others. As yet, we have barely started the exploration of the aeronautical sciences.

The only way we can find the answers to these knotty problems is to assure that America has adequate numbers of scientific and engineering personnel, and that their energies are devoted to this end.

(*Turn to page* 408, *please*)

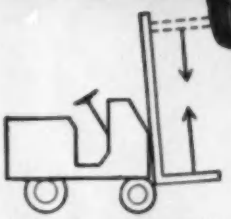
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HYDRECO HOLLOW PLUNGER CONTROL VALVE





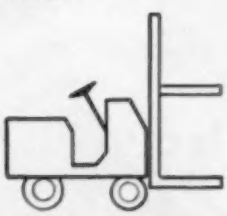
V-13 Series 3 Plunger Valve with piston-type Relief Valve. Location of ports and controls reversible. Available 1 to 5 plungers...5 to 80 gpm.



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AIRBRIEFS

(*Continued from page 407*)

New Safety Device

An important advance in aviation safety has been made possible as a result of the development of a fire suppression system by Simmonds Aerocessories, Inc., of Tarrytown, N. Y.

The system operates on the principle of snuffing out a fire within a few milliseconds of the time in which it starts, thus preventing fire and/or explosion in fuel tanks. The system developed by Simmonds is automatic and high-speed in action. It includes a sensitive electrical sensing device connected to a fast-acting dispersal unit containing a quantity of suppressant agent. When the sensing device detects an incipient explosion an electrical circuit is closed, a detonator within the dispersal unit ruptures causing almost instantaneous dispersal of the suppressant agent in mist form. This mist inerts the unburned vapors around the expanding flame front, immediately stopping the combustion.

A wide variety of detectors including both visual and pressure-rate-of-rise types have been developed for use with a wide variety of capsules. Suppressing agents which are used depend upon installation requirements and include such agents as methyl bromide, carbon tetrachloride, bromochloromethane, dibromodifluoromethane and monobromotrifluormethane.

The basic principles used in the fire suppression system were evolved as a result of original work done prior to 1950 at the Royal Aircraft establishment at Farnsborough, England. The first equipment based on these principles was developed by the Graviner Manufacturing Co. Ltd. of England. Simmonds is the exclusive American licensee for development and manufacturing in North America.

Air Conditioning for Jet Tankers

Boeing Aircraft Company of Seattle, Washington has chosen a cabin air conditioning system developed by the AiResearch Division of the Garrett Corp. for their KC-135 jet tanker transport aircraft series. This is the Air Force tanker version of the Boeing 707 jet passenger transport now under development.



BOOKS . . .

FIVE - LANGUAGE AUTOMOBILE DICTIONARY, *published by Bibliotheque de l'Argus de l'Automobile, 1 Place Boieldieu, Paris, France. Price, $4.80.* In this new edition, the editors have attempted to perfect the terminology in giving the term most frequently employed in five languages (French, German, Spanish, Italian, and English) for a wide variety of automotive parts. The book is intended as a valuable aid to technicians, translators, and all others engaged in dealing with foreign automotive phraseology.

TOOLS OF THE EARTHMOVER, *by J. L. Allhands, published by Sam Houston College Press, Sam Houston State Teachers College, Huntsville, Texas. Price, $5.00.* From the beginning of time the urge to move from place to place in order to become independent of neighbors and to trade has been an instinct of man. In his comings and goings, primitive man first took to animal trails and rivers as his arteries of travel. Accordingly, when an unknown imagination gave him the wheel, he began scheming for better ways than paths and streams. These ways, roadways, and canals, were started by the earthmover, no one knows exactly when. Several years ago, the author resolved to tell the story of the struggles and achievements required to give the world its present-day earthmoving equipment. That story is the subject of this volume. It shows with profuse illustrations how the whole earthmoving industry has been revolutionized.



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all these basic advantages crystallized in CLARK-TORCON





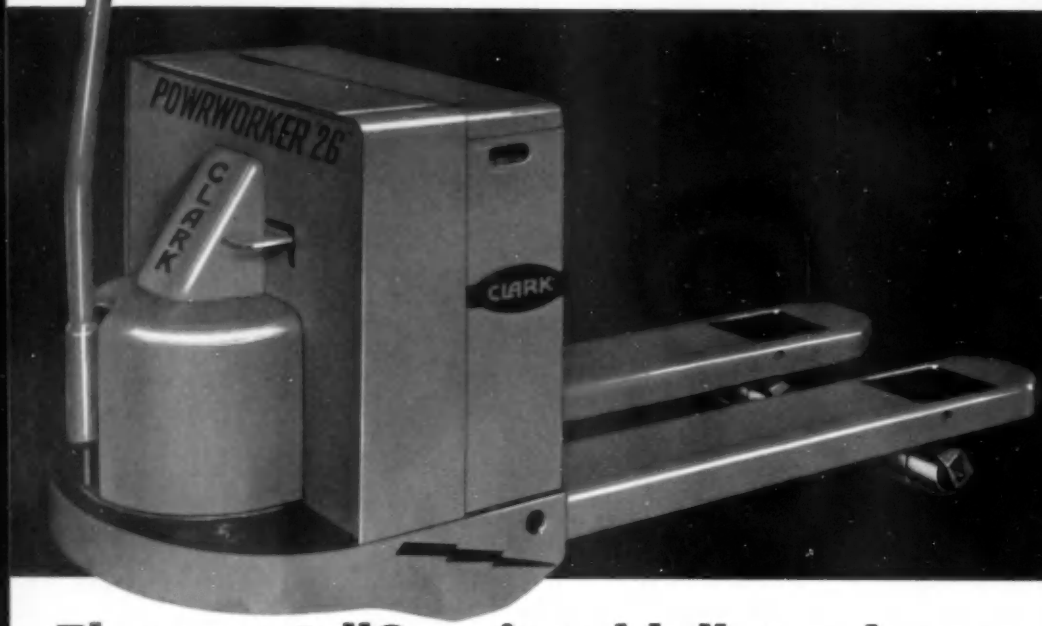


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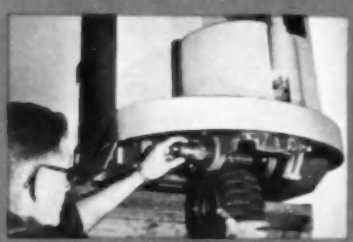
Ask your maintenance man to compare these ACCESSIBILITY FEATURES



CHANGE DRIVE TIRE IN 2 MINUTES. Standard Press-on type demountable tire is furnished as original equipment. Raise the truck 12 inches and loosen spanner nut which releases the axle shaft and the wheel drops out. Split wheel rim with spreader inserts allows immediate tire dis-assembly and re-assembly.



POWER HEAD READY-TO-WORK-ON IN 2 MINUTES. Split cover allows complete accessibility to the drive motor, brakes, resistor and control panel by merely removing 7 screws. Revolving head permits servicing any side of the power head without further dis-assembly. For major overhaul, the whole unit can be removed in 17 minutes.



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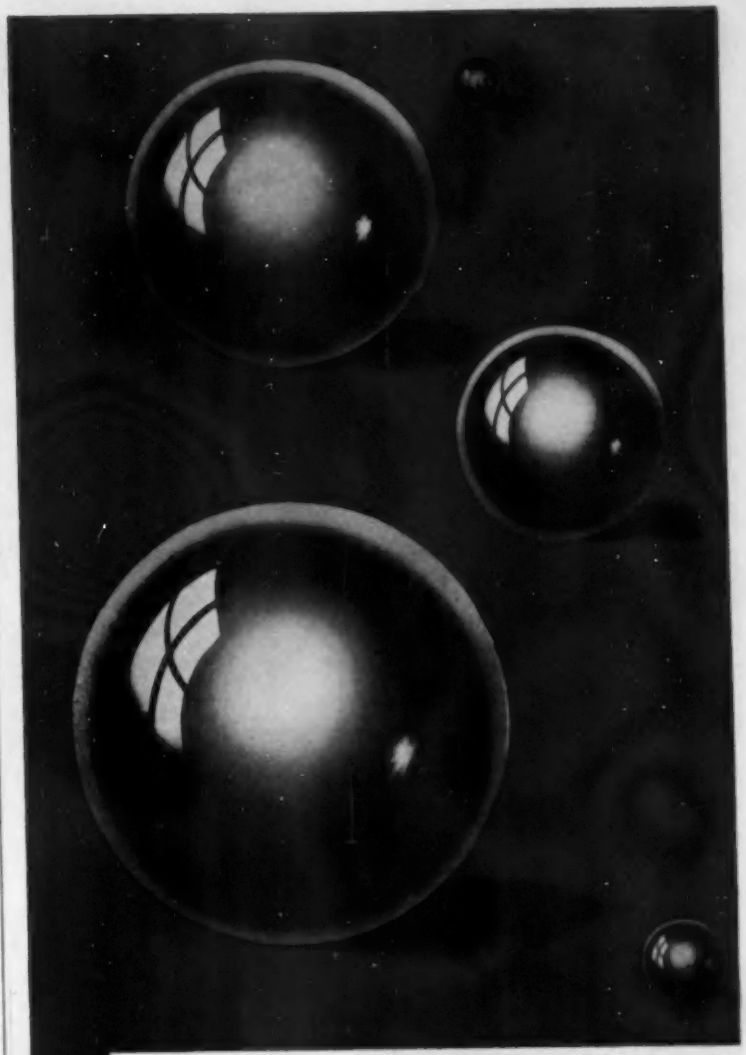
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POWRWORKER SECTION, Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek, Michigan

CALENDAR

OF COMING SHOWS AND MEETINGS

ASME Engineering Management Conference, Hotel Statler, Cleveland, O. .....March 23-24
AMA Manufacturing Conference, Palmer House, Chicago, Ill., March 28-30
Ninth Western Metal Congress and Exposition, Pan-Pacific Auditorium, Los Angeles, Calif., March 28-April 1
American Power Conference, Sherman Hotel, Chicago, Ill., March 30-April 1
National Fluid Power Association, annual spring meeting, Colorado Springs, Colo. .....April 5-7
World Plastics Fair and Trade Exposition, Exposition Park, Los Angeles, Calif. .....April 6-10
NAM Institute on Industrial Relations, New York, N. Y.....April 11-15
American Society of Lubrication Engineers, annual meeting and exhibit, Hotel Sherman, Chicago, Ill. .....April 13-15
ASME Spring Meeting, Lord Baltimore Hotel, Baltimore, Md., April 18-20
AMA National Packaging Exposition, International Amphitheater, Chicago, Ill. .....April 18-21
SAE Golden Anniversary Aeronautic Meeting, Production Forum, and Aircraft Engineering Display, Hotels Statler and McAlpin, New York, N. Y. .....April 18-21
International Motor Show, Turin, Italy .....April 20-May 1
Society for Experimental Stress Analysis, spring meeting, Hotel Statler, Los Angeles, Calif., April 27-29
American Zinc Institute, annual meeting, Drake Hotel, Chicago, Ill. .....April 28-29
Society of Aeronautical Weight Engineers, annual conference, Hilton Hotel, Ft. Worth, Tex...May 2-5
British Industries Fair, London and Birmingham, England .....May 2-13
Fourth International Aviation Trade Show, 69th Regiment Armory, New York, N. Y. .....May 4-6
Society of the Plastics Industry, annual meeting and conference, cruise on "Queen of Bermuda," May 7-15
Industrial Waste Conference, Purdue Univ., Lafayette, Ind. ..May 9-11
Metal Powder Association, annual meeting and show, Philadelphia, Pa. .....May 10-12
Sixth National Materials Handling Exposition, International Amphitheater, Chicago, Ill....May 16-20
Fabricating Machinery Hydraulic Conference, Hotel Statler, Detroit, Mich. .. ..May 17-18
National Telemetering Conference, Hotel Morrison, Chicago, Ill. May 18-20
International Internal Combustion Engine Congress, The Hague, Netherlands .....May 23-28
Indianapolis Race, Indianapolis, Ind., May 30
Canadian International Trade Fair, Toronto, Ont. .....May 30-June 10
Third Basic Materials Exposition, Convention Hall, Philadelphia, Pa. .....May 31-June 3
American Welding Society, spring meeting, Hotel Muehlebach, Kansas City, Mo. .....June 7-10
Paris Aeronautical Show, France June 10-19
Le Mans 24-Hr Race, France..June 11-12



COOLIDGE
Balls

CHROME ALLOY AND STAINLESS

COOLIDGE CORPORATION
MIDDLETOWN, OHIO

Complete New Line of Chevrolet Trucks

(*Continued from page* 162)

Tubeless tires are standard equipment for light-duties.

A pronounced "two-level" effect where front fenders join the hood is common to the new models, but the other styling touches impart a ready distinction. The grille of the lighter trucks is of lattice-work design formed by the intersection of horizontal and vertical members. The grille of the heavy-duty jobs is dominated by a single, massive horizontal element.

Three models are now offered as forward control units, including one mounted on a new short wheelbase of 104 in. This truck contrasts to the 220-in. wheelbase of the longest 1955 Chevrolet chassis, which with others in the heavy-duty ranks has been raised to an 18,000-lb GVW rating. Another added model is a 123-in. wheelbase pickup in the light-duty series. This mounts a 90-in. box compared to 78 in. on the shorter truck.

In addition to a V-8 with the shortest stroke in the industry, truck buyers will have their choice of new 235- and 261-cu in. six cylinder valve-in-head engines, improved for quieter operation and offering better cooling and lubrication systems. All truck chassis are equipped with a new 12-volt electrical system.

Power steering is now available on all models, as are power brakes. The Hydra-Matic automatic transmission is an option on light- and medium-duties, except the sedan delivery, which can be equipped with Powerglide.

For smoother application of power to rear wheels, the Hotchkiss drive is extended to all models. Two heavy-duty single-speed and two, two-speed axles with planetary-type gears are among options.

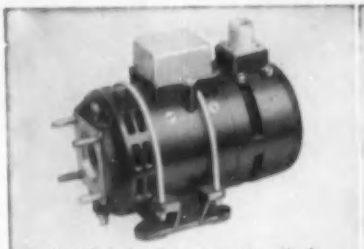
New front axle "I" beams on all Task Force series are lengthened for additional front tread width. The new 34-in frame width allows wider spacing of front springs. On forward control chassis models, a new deep-drop I beam reduces ground-to-frame height and lowers the center of gravity for improved steering and handling.

All front springs are longer and, in some cases, wider, assuring a softer ride. Higher capacity optional springs are introduced for higher loads. Spring length increases range from 4 to 12 in. in the various series. As a safety measure, full double-wrapped eyes are at the fixed end of all front truck springs. Front shock absorbers are positioned farther outboard for better comfort.

Improved geometry and gears reduce steering effort. Curb-to-curb turning diameters are smaller for all conventional models except the 220-in. wheelbase model. New linkage-type power steering is optional on all models.

Rear springs in all 1955 models are 52 in. long, six inches longer than 1954 models, with one model exception. Spring capacities in heavy-duty trucks are tailored closely to GVW ratings for load protection and riding comfort.

A propeller shaft parking brake is standard on all Series 3800 trucks.



Aircraft hydraulic pump motor. Maximum output with minimum weight.



Lightweight universal motor with efficient spur gear speed reducer.

FOR Product Design GOALS

THAT ENGINEERS SAY

ARE MOST IMPORTANT...

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• Reduced Costs • Decreased Maintenance
• Improved Appearance • Reduced Weight
• Greater Compactness

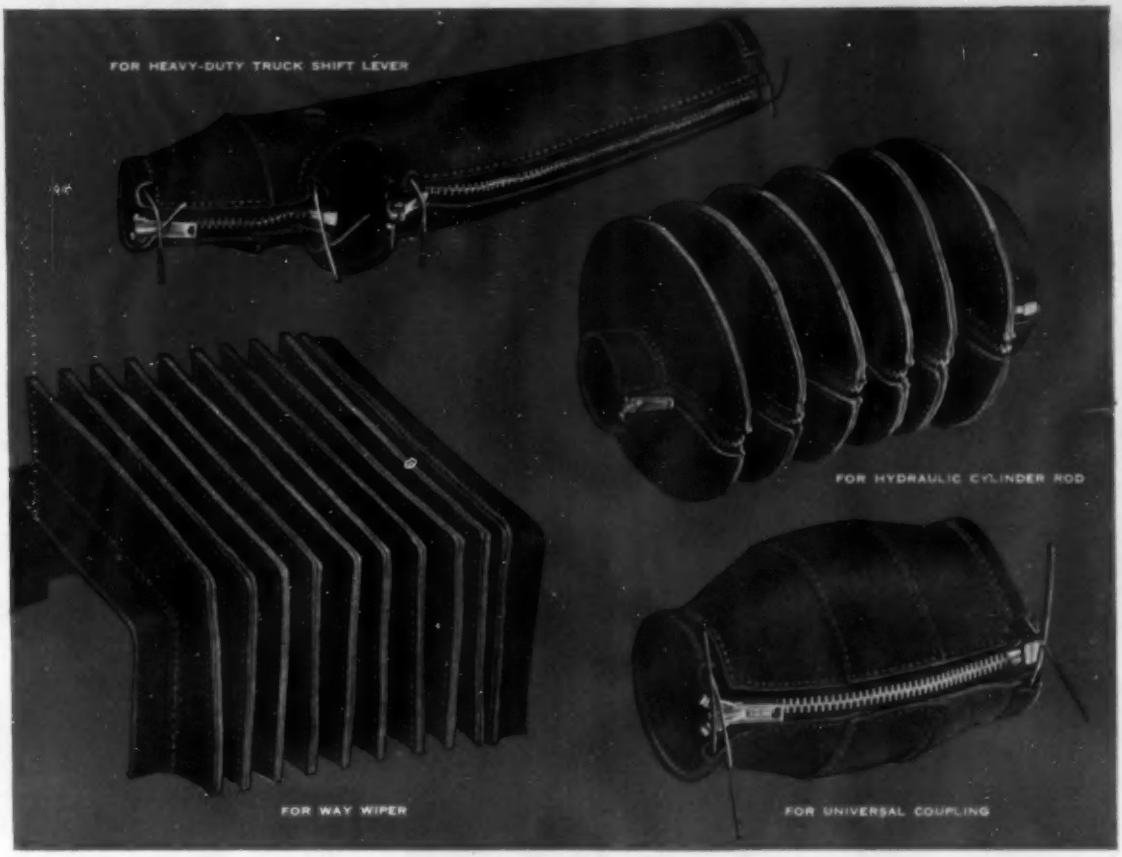
These goals are identical with the advantages being secured with *specially engineered* Lamb Electric Motors.

Our 39 years of experience, covering practically all types of motor-driven products, is available to help you obtain these results.

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Lamb Electric
SPECIAL APPLICATION FRACTIONAL HORSEPOWER MOTORS



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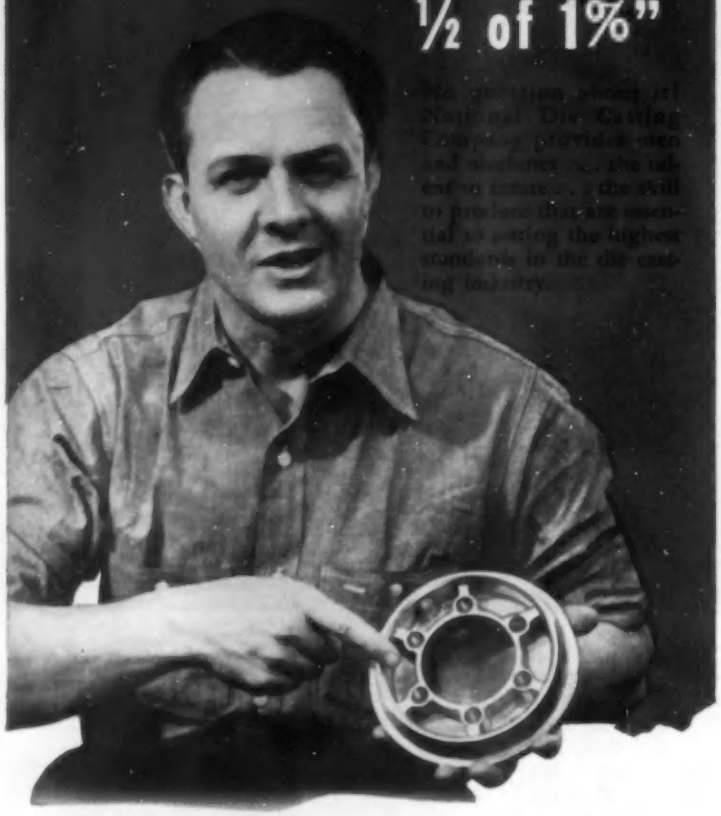
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When you buy your zinc and aluminum die castings at NATIONAL, you enjoy the advantages of doing business with a reliable company that has over thirty years of successful growth and expansion in serving many of the most prominent names in industry. Call in your NATIONAL sales engineer and see how you can achieve substantial savings as well as improve your products with castings by NATIONAL.

*Name upon request

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replacing the rear wheel parking brakes in that series. On Series 3600 and on forward control chassis models, the new brake supplants the cable type only where optional three-speed heavy-duty, manual four-speed or automatic transmissions are used. Power brakes are standard on the heavies.

Six choices of transmissions are available on the various series. These include three- and four-speed Synchro-mesh, the Hydra-Matic and Powerglide. Automatic shifts are confined to the light- and medium-duty models. An overdrive, which reduces engine speeds at cruising range, can be had on light-duty trucks.

Business Pulse

(*Continued from page* 364)

part of 1954 with the business upswing and the termination of the election campaigns. They could be strongly revived, however, in the event of a sharp rise in unemployment during the late winter. Already such demands have appeared in some quarters.

Construction Boom Continues

The construction boom, which was unanimously welcomed during the period of reduced business activity in 1953 and 1954, is beginning to arouse concern in some quarters. Conservative observers are asking whether such a pace can be maintained and, if not, what its subsidence would mean for business in general.

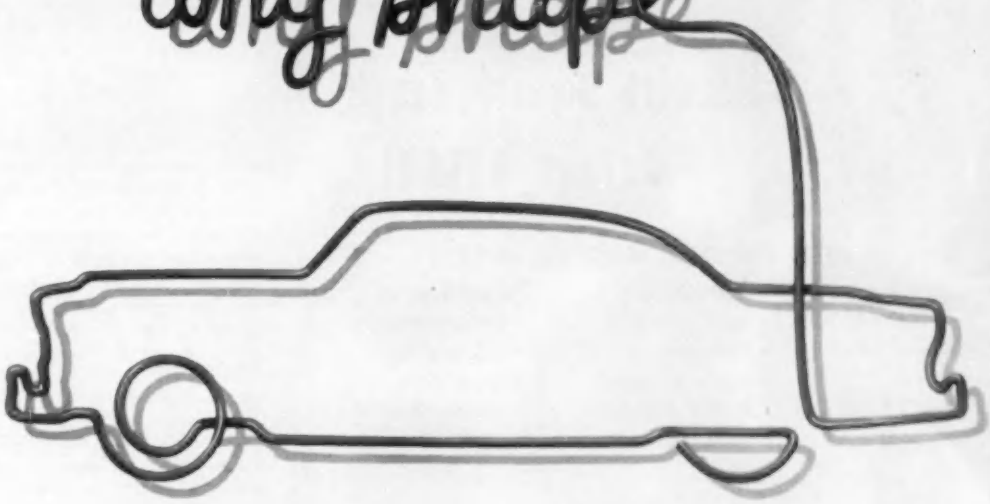
So far there is no sign of a letdown. Total expenditure for construction in January is estimated at $2.8 billion, a new all-time record for the month and 13 per cent above the previous January peak, reached last year. On a seasonally adjusted basis it is equivalent to an annual rate of more than $40 billion, or $3 billion above the 1954 total.

The increase during the past year is entirely accounted for by the rise in private building activity, and the great bulk of this increase has been in home building. The number of privately financed homes started in January was 35 per cent greater than that a year earlier.

Abundant Mortgage Money

Such a rate of new construction might well raise questions at any time, but in the present instance these

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questions are sharpened by the belief that the boom owes a large part of its force to the abundance of mortgage money and the Government's liberality in guaranteeing mortgages under Veterans' Administration and Federal Housing Administration programs.

There has been a marked change in these respects since early 1953, when mortgage money was relatively scarce, especially for VA-guaranteed loans. The interest rate on such loans was raised from 4 to 4½ per cent in May, 1953, in an effort to make this form of financing more attractive to lenders. Soon thereafter, interest rates in general began to decline as a result of less active business and easier Federal Reserve policy. The result was a steadily developing boom in VA loans.

Residential building received further stimulation from the Housing Act of 1954, which liberalized FHA mortgage terms and gave nonveterans almost the same advantages as veterans in home financing. The result was an acceleration of activity in the nonveteran housing market, which is still the main factor in the total demand for new home construction.

Not only is the rate of current activity unabated, but such foreshadowing factors as new contract awards indicate that the level of construction is likely to be maintained as far ahead as can now be foreseen.

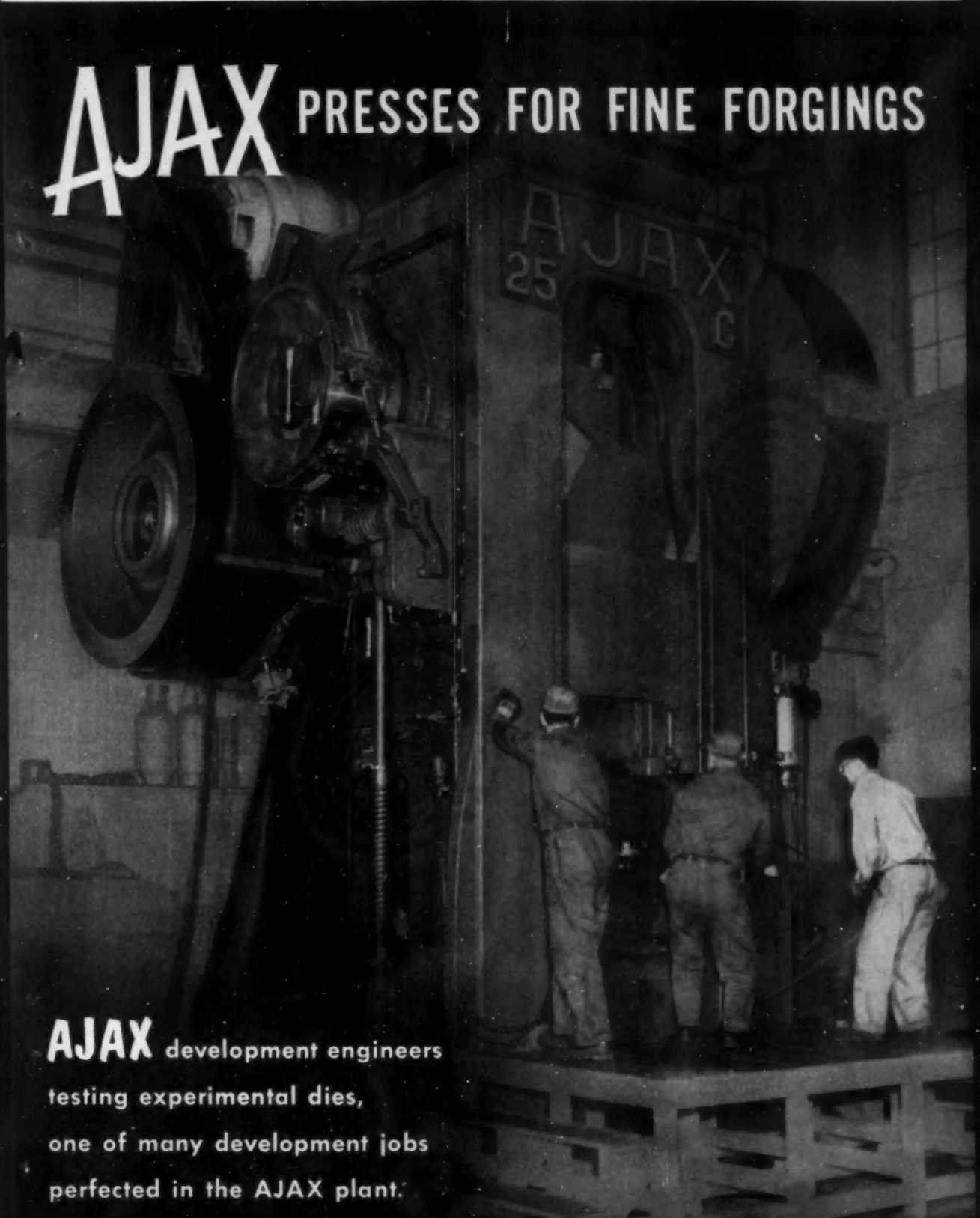
Another consideration that raises questions as to the future of residential construction is that houses are being built at a considerably faster rate than new families are being formed. The rate of family formation has declined sharply in the last six or seven years, reflecting in part the low birth rate of the 1930's and the consequent decrease in the number of persons now arriving at marriageable age. The same underlying factor is expected to hold down the rate of family formation for several years to come. With new families currently being formed at a rate of about 600,000 a year and housing starts running at more than a million, it is natural to ask how long such a disparity can continue.

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DEWART BUILDING NEW LONDON, CONN.

Vehicle and Petroleum Engineers Discuss Current Problems

(*Continued from page* 175)

lubricants by a team of five experts speaking individually for General Motors Corp., American Motors, Studebaker-Packard, Chrysler, and Ford. Later some of the more controversial subjects were aired by a team from the oil industry—representatives of Standard Oil of Indiana, Richfield, Pure Oil, Shell, and Socony-Vacuum. This interchange provoked some heated debate, laid bare some knotty problems still unsolved.

New Lubrication Practices

This interchange highlighted some interesting items. Among the most important were those dealing with engine lube specifications, rear axle lubes, automatic transmissions fluids, and chassis lubes. Out of it came some startling revelations. For example, at least several makes of cars have eliminated the differential drain plug, and recommend using rear axle lube without change, except for make-up, for indefinite periods. Others, too, do not recommend replacing rear axle lubes. Moreover, vehicle manufacturers acted in accord in shying clear of multi-purpose lubes for differentials, preferring the initial factory charge of active EP, some using active sulfur, others lead-soap formulations. It was conceded that after this initial charge had done its work of break-in, a multi-purpose material found in the field might be useable.

J. M. Campbell of GMR, cited the requirements for engine lubes and mentioned among other characteristics those of high viscosity index, high film strength, resistance to oxidation, low carbon deposition rate. GM recommends using the initial charge of rear axle lube without change periods; recommends the Type A automatic transmission lube without change. He also noted that the Allison Division is developing a proposed specification for a Type C lube for heavy duty automatic transmissions, probably a mill type oil or turbine oil that does not require high specification quality.

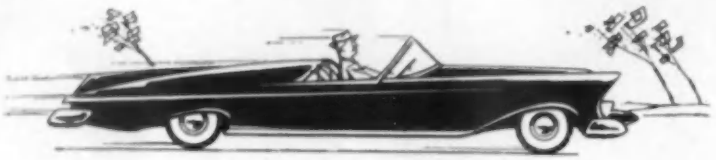
Multiple Viscosity Engine Lubes

C. E. Burke, American Motors, said that premium oils appear to be imperative for proper hydraulic valve lifter operation. J. M. Clark, Studebaker-Packard, mentioned that his organization was not recommending use of the new multiple-viscosity or multi-grade engine lubes. C. M. Heinen, Chrysler Corp., also voiced a preference for single viscosity rating of engine lubes; emphasized, however, that Chrysler does not rule out the use of multi-vis lubes. Chrysler's position is that it does not object to multi-vis, provided the grade that is used contains the viscosity range recommended for a given engine and operating condition. Chrysler does rule out any lube that does not carry a specific SAE grade. Heinen also mentioned that Chrysler insists upon non-additive engine lubes for initial engine break-in.

A. E. Cleveland, Ford Motor Co., reported that his company is testing multi-vis engine lubes at the present time to form the basis for specific recommendations.

(*Turn to page* 420, *please*)

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GEAR DEBURRING
AS MODERN



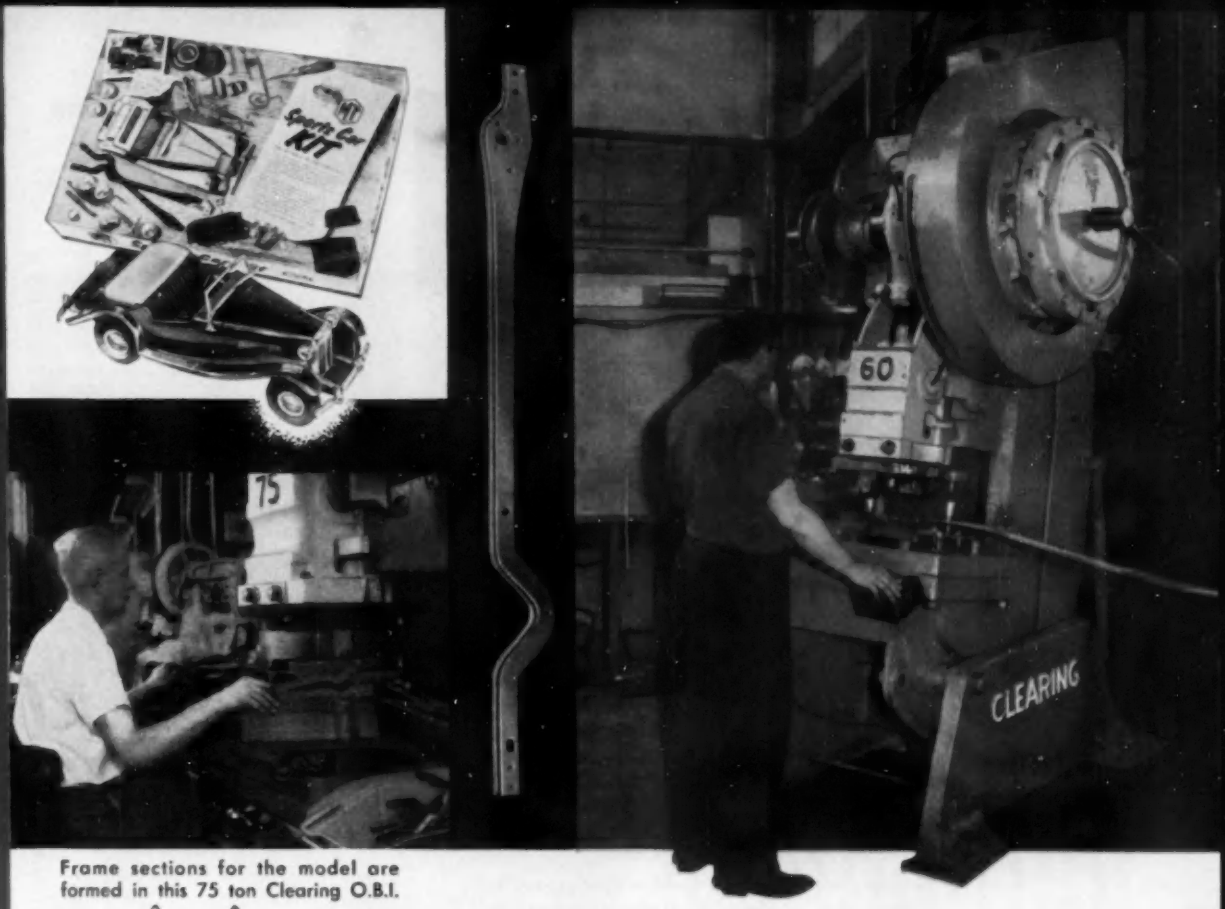
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(*Continued from page* 418)

Chassis Lubricants

Chassis lubes came in for attention too. One interesting point was that some qualitative tests appear to indicate that chassis lube becomes inactive after a period of a few hundred miles of operation. It seems to follow that perhaps cars should be lubricated more often than once in 1000 miles. This is one of the major features of the Lincoln-Mercury Multi-Lube accessory that takes care of 12 lubrication points. It encourages the owner to lubricate these points at frequent intervals, leaving only the front wheel bearings and universal joints for service station attention.

Effectiveness of the Multi-Lube device was confirmed by the experience of Standard Oil of Indiana, in a scattered operation of some 60 heavy duty vehicles. This is purely an experimental project since each of the vehicles requires installation of four to five of the units to cover all lubrication points. It was found desirable to install the equipment because these trucks are out in the field where service facilities are not close at hand. Experience to date has shown that the device is quite effective, keeps all points thoroughly lubricated. On vehicles operating over the road, the accessory is so arranged as to lubricate once for every brake application. In city driving, they have installed a timing device that causes the accessory to operate once for each six brake applications.

Oil Industry Presents Arguments

After the vehicle representatives had their say, it was obvious that the oil industry did not like their conclusions. Granting that some of the recommended practices hurt the oil industry and service stations in their pocketbooks, the technologists had some technical arguments as well. For one thing, they were unanimous in concluding that all lubes deteriorate with use. E-P lubes lose their effectiveness and activity over prolonged periods of use; engine lubes lose effectiveness through depletion of additives; and the same is true of other types of petroleum products. They felt that even if the needs of the first owner might be satisfied by the initial charge, they had a responsibility to the second and third and fourth owner as well. They did not believe







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that the various lubricants would be effective indefinitely.

Another point they made was that new developments were a product of experience and could be paid for only through the sale of a specific item. For example, if the sale of rear axle lubes at service stations were discouraged, they doubted whether the industry could undertake fresh research projects when the vehicle manufacturer came to the end of the line and demanded a new type of lube for a compact, heavily stressed axle.

Oil Additives

R. E. Jeffrey, Shell Oil, made a plea for more frequent engine drain periods to take care of additive depletion. He also drew attention to the fact that crankcase capacity is trending lower and that too requires more frequent oil changes.

Leonard Raymond, chief automotive engineer, Socony-Vacuum, mentioned that a new type of additive is on the way for multiple-purpose lubes, asked for cooperation in testing it for acceptance. Touching on the extremely heavy valve train loading in current passenger car engines, he asked for more uniformity of design among engines of different makes to ease the lubrication problem.

Improved Octane Values

Needless to say, considerable attention was given to fuels as well. In general the motor car producers were pleased with the improvement in research octane values of fuels in general distribution this year, particularly since many of the engines were pointed to the higher ratings, as noted by A. E. Cleveland. Other comments touched on the prospect of some added hot starting and vapor lock problems due to higher underhood and carburetor temperatures.

L. J. Grunder, on the other hand, urged caution in further increases in engine octane requirements, pointing out that while the slope of the fuel octane curve was quite gradual, the slope representing engine octane requirements has risen sharply during the past few years and will outstrip service station fuels very quickly.

Dip-Stick Standardization?

Finally, there was a discussion of the case of the confusing dip-sticks by Carl W. Geori, Quaker State. The title of his paper may have sounded humorous but the subject was not. The gist of the matter is that engine dip-sticks are a source of confusion and irritation to service station workers. There are so many variations in dip-stick sizes and locations, markings and graduations, as well as surface finish that it has become difficult to know when to add a quart of oil. He has requested the API lubrication committee to present a recommendation to the SAE to study the dip-stick problem with the objective of standardizing markings and surface finish.

Conclusions

Finally, it was obvious that although there is sharp cleavage on the matter of lubricants, automotive circles are looking to the petroleum industry for additional research on the many problems covered at the meeting; and will welcome improvements in lubes for the engine, axle, and chassis.

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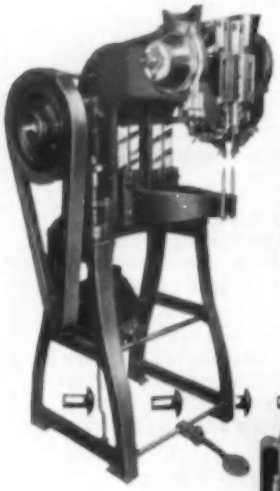
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Every normal year contains 525,600 minutes. In 1953 the American people spent approximately $85,000 a minute for national defense, and foreign aid cost another $11,000 a minute.

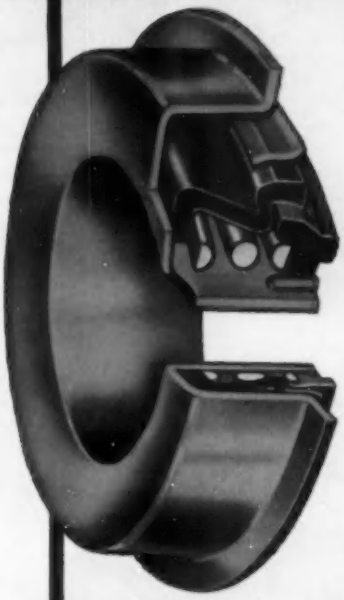
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REINFORCED PLASTICS INDUSTRY
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(*Continued from page 234*)

make up the reinforced plastics industry in the U. S. today. It's a business that has grown tremendously. In 1945 it used 3.5 million lb of polyester resins. Last year, an estimated 27 million lb were consumed.

Almost every important reinforced plastics materials manufacturer displayed his wares. Bakelite Co., a division of Union Carbide and Carbon Corp., previewed its syntactic foam. This new cellular wood-like plastic is claimed to save up to half the cost of reinforced plastic structures as a low density sandwich core material that adds stiffness without sacrificing strength. The product was developed by bonding nitrogen-filled Bakelite phenolic spheres with phenolic, polyester, or epoxy resins, in the same manner as gravel and cement form concrete.

Raybestos-Manhattan, Inc., displayed two products newly modified for the low-pressure laminating industry: Pyrotex felts and Novasbestos papers. The company believes the material will find applications in aircraft, guided missiles, and rocket engines; and in the commercial field, for containers, pipes, and furniture. An automotive industry application could be body panels.

The company made available a new technical bulletin with data on laminates made with these reinforcing agents. Exceptionally high modulus of elasticity is claimed with these materials, as well as high strength at elevated temperatures. Non-porous laminates made from phenolic polyesters or epoxy resins result from uniform reinforcing agents. These materials produce exceptionally smooth and tough surfaces.

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This reporter spoke to many of the top design and engineering brains in reinforced plastics in the airframe industry. Here's their thinking:

. . . There's a definite trend into primary structural development rather than equipment and secondary structures.

. . . More non-metallic parts are being designed right into the airplane; this trend is compelling the use of reinforced plastics. Particularly in high performance aircraft, current design thinking tends away from appendages.

. . . There's tremendous emphasis in the industry on development of high temperature-resistant plastics. Right now, there's a lot of thinking, research, development, and some actual production in progress.

. . . The trend toward primary structural applications rather than secondary structures and equipment items requires the building-in of such structures as radar housings. Some

(*Turn to page 430, please*)

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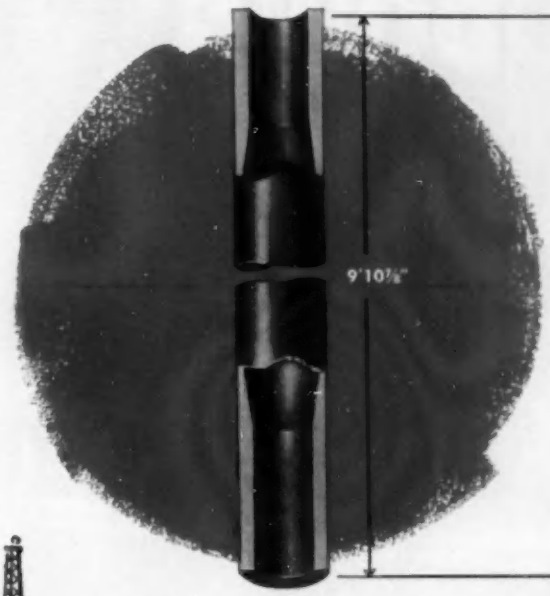
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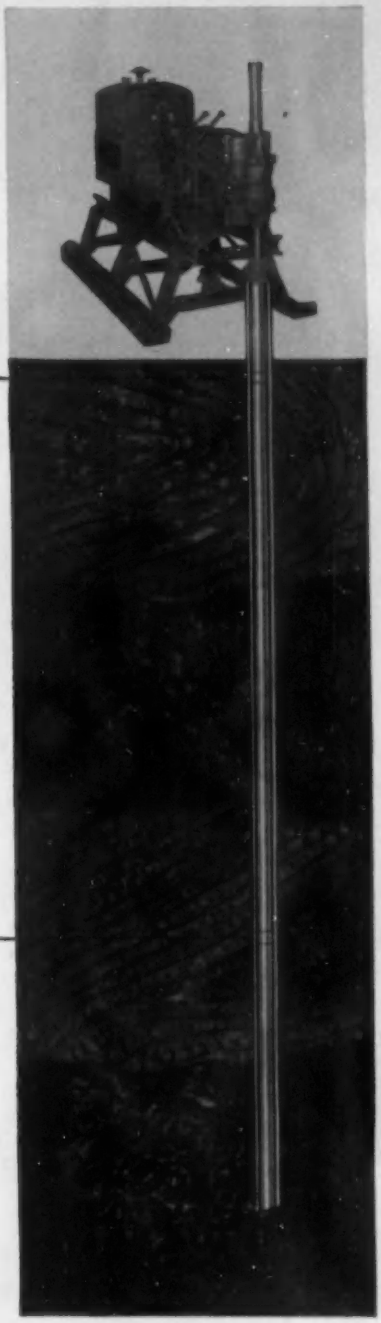
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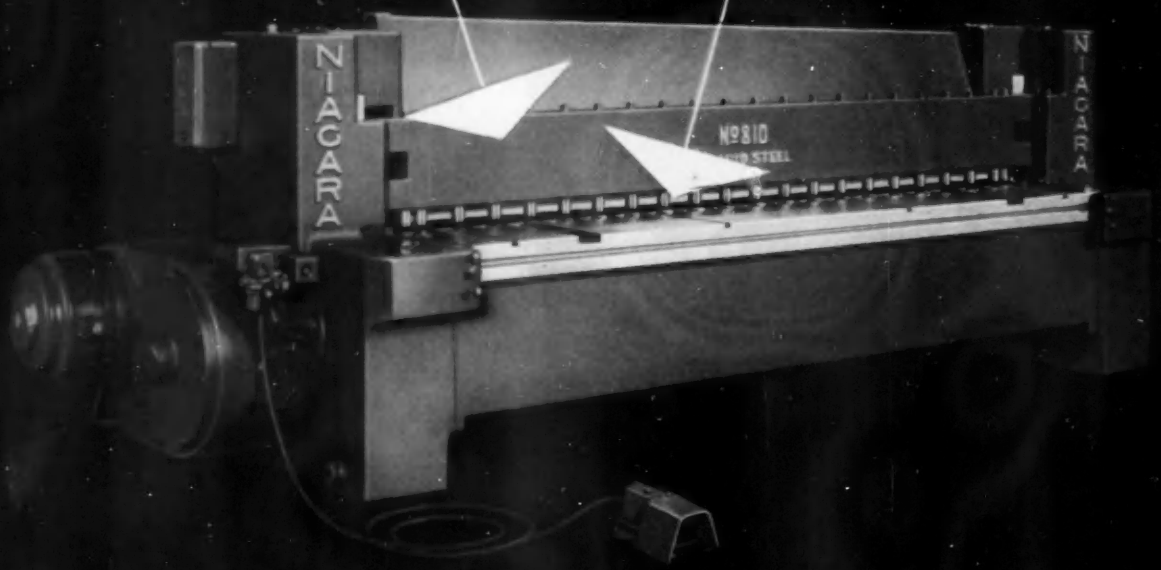
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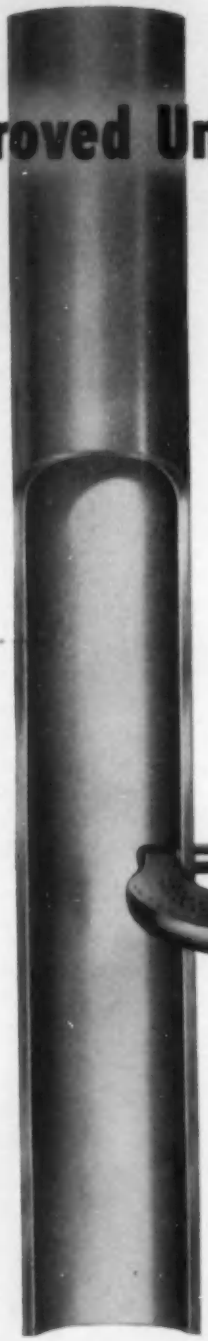
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REINFORCED PLASTICS INDUSTRY

(*Continued from page* 426)

new types of electronics equipment in aircraft require isolation of whole sections of the plane, such as wing or tail section, from the rest of the structure. Non-metallic substances are needed for the barrier. And these barriers must have structural value as well as insulating value.

. . . A potential stumbling block to faster development of reinforced plastics for aircraft application is the lack of testing methods, primarily non-destructive testing of finished components. With the rapid advance of new plastics products, this lack could soon become serious.

. . . There's a trend toward better tooling for plastic parts. Matched metal dies are more in evidence than vacuum bag techniques. This is particularly true in tooling primary structural parts where the end product is to be closely controlled dimensionally.

. . . The plastics industry is making excellent headway in development of high heat resistant materials, but the requirements keep going higher and higher and there's still a long way to go to catch up with them. In fact, some of the newer materials are claimed to retain more of their physical properties at elevated temperatures, particularly around 500 F, than the light metals currently available, with perhaps the exception of titanium.

Battlefield experience in Korea promoted a new use for reinforced plastics. Aluminum jettisonable fuel tanks gave the Chinese too much of a gift in salvageable material whenever the tanks had to be dropped. Plastic tanks are now in production by several firms; 10,000 are now on order for the Air Force. An enemy would find no value in reclaiming the plastic.

And incidentally, the XQ-10, an improved plastic target drone, is slated for production with matched metal dies and supporting equipment that provides for mass production of 600 per month.

Samuel S. Oleesky, chairman of the Reinforced Plastics Division, SPI, and vice-president and chief scientist of Micronics, Inc., Gardena, Calif., told AUTOMOTIVE INDUSTRIES in an exclusive interview, "The rapid expansion of the industry has tapered off to a stabilization and realization that emphasis must now be placed upon de-



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velopment of properties rather than on unique applications. It is the responsibility of the industry to provide the public with uniformly good products, not as novelties but as items in which plastics are indicated as the preferred material rather than as 'ersatz' material.

"The future of structural plastics depends now on materials manufacturers being able to provide methods for the bonding of resins to reinforcing material with the resultant high physical properties necessary for stiffness and strength."

Of the total airframe weight delivered during 1954, approximately 1 per cent was in the form of reinforced plastic products. In a featured luncheon talk, "Future Unlimited For Reinforced Plastics," Col. Robert W. Green, Headquarters, USAF, said, "A few years ago the sound barrier seemed difficult to penetrate. Today we have erased the sound barrier obstacle only to be confronted by the thermal barrier. The airframe structural designer, who had become accustomed over many years to letting the aerodynamics and propulsion engineers set the pace, has begun to appreciate the magnitude of the problem facing him. Propulsion performance capabilities are expanding faster than structural capabilities. We are beginning to appreciate that aerodynamic heating produces not only one, but fundamentally three effects on an airframe: (1) changes in physical properties of the structural materials; (2) geometrical distortion of the structure; and (3) thermal stresses due to thermal gradients.

"Variations in temperature along the wing chord, or at fuselage attachment points, produce stresses which can easily yield or buckle the load-carrying structure. Today, structural engineers realize that considerations other than strength may dictate the structural design. Local distortion of the structure, due to thermo-elastic effects, may precipitate panel flutter and cause a whole wing to tear itself apart in a matter of seconds. We know that even accurate predictions of design trends for the next five years are difficult.

"The advancing requirements of military weapons have exceeded the rate at which it has been possible to introduce and develop satisfactory organic and inorganic materials. In order to maintain a safe working balance between military demand and developments, increased diligence must be exercised toward making new materials available and toward eliminating the deficiencies of those presently available.

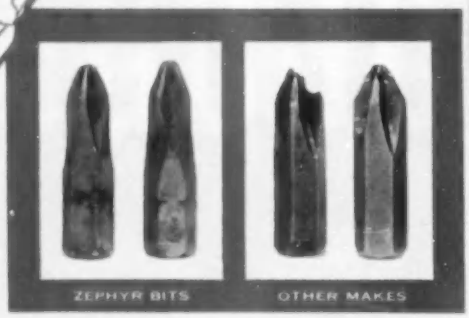
"The main problem of the military designer and the engineer was and is the selection of the proper material from a wide variety and the adaptation of it for any particular end use. At present, and even more definitely in the future, construction of an increasing number of end items will require materials not as yet available even in the laboratory. Many problems will be solved through the use of old materials in various fabricated combinations," Col. Green said.

Lockheed Aircraft Corp.'s G. J. Walkey, manufacturing research engineer, in an excellent paper told the meeting, "The aircraft industry is unique in that it is different from other large manufacturing businesses with regard to its tooling requirements. As a rule we have thousands of parts which must be tooled for quantities of a few hundred, and subject to rapid revision. . . . The use of reinforced plastics is a 'natural' for contoured tools because it can be molded or laminated by relatively inexperienced personnel, and yet main-

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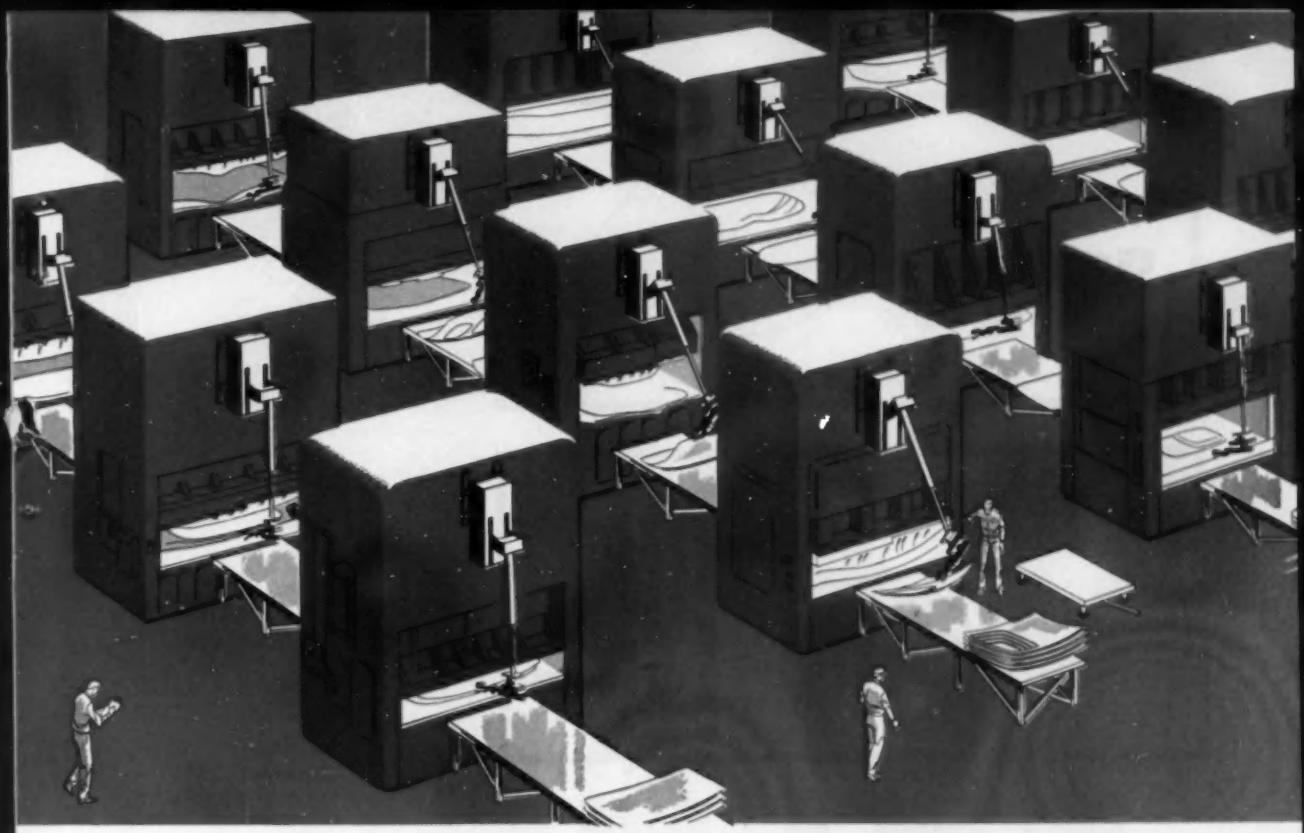
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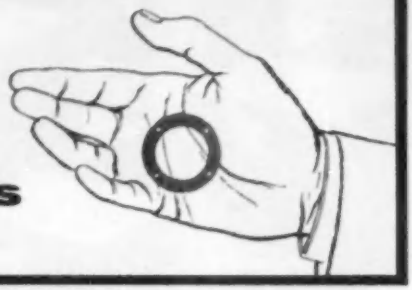
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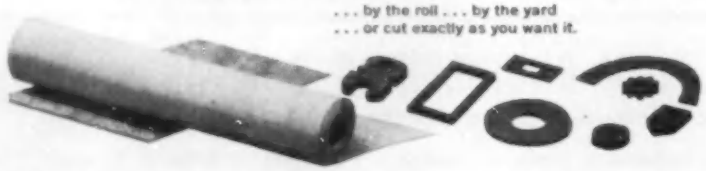
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tain the accuracy expected from skilled tool makers. . . .

"There is, of course, a newcomer that is rapidly taking over in the reinforced plastic tooling field, known as epoxy resins. The main reasons for its success are low shrinkage, outstanding adhesion to glass fibers, and ease of handling. Epoxy reinforced glass cloth will shrink only about 0.05 per cent upon curing. This high dimensional stability is extremely interesting to the tool engineer. We must remember that today's high-speed aircraft now requires accuracies in tooling that were unheard of a few years ago, so that any tooling material that is dimensionally stable is a welcome addition," Walkey said.

One major aircraft factory, he pointed out, has duplicated an entire set of master tooling by the use of reinforced laminated plastic. These tools were duplicated in record time and avoided many months of delay which would have occurred if they had utilized the usual materials and methods.

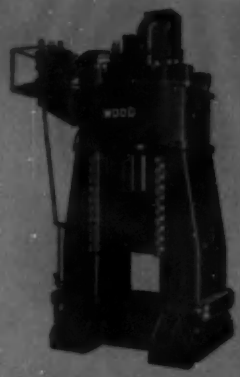
"Still another aircraft manufacturer," Walkey went on, "has constructed a large master that has held an accuracy of ± 0.002 in. Another reinforced tool weighing 240 lb replaces a Kirksite equivalent weighing 3100 lb that was mounted on a special dolly weighing another 1000 lb to keep it from sagging ⅜ in. from its own weight.

"The construction of spot welding fixtures can become quite heavy and cumbersome, even with reinforced plastics, if care is not taken in designing. By using honeycomb reinforced structure and excellent design one aircraft manufacturer has overcome the problem of excessive structure formerly necessary to maintain the close tolerances required.

"Plastic dies, like other plastic tooling, have undergone considerable redesigning since the introduction of epoxy resins.

"Epoxy resins possess several qualities which make them especially desirable for the construction of forming dies. They are dimensionally stable, can be cured at room temperatures, possess high impact, flexural and compressive strengths, and bond well to metals. As epoxy resins have been expensive in comparison with phenolic and polyester resins, their use has been confined mostly to surface coatings in the construction of dies. Epoxy resins are usually cast against steel, Kirksite, lead, or other plastics to construct a forming die."

Mr. Walkey suggested this typical applicable tooling list using plastic



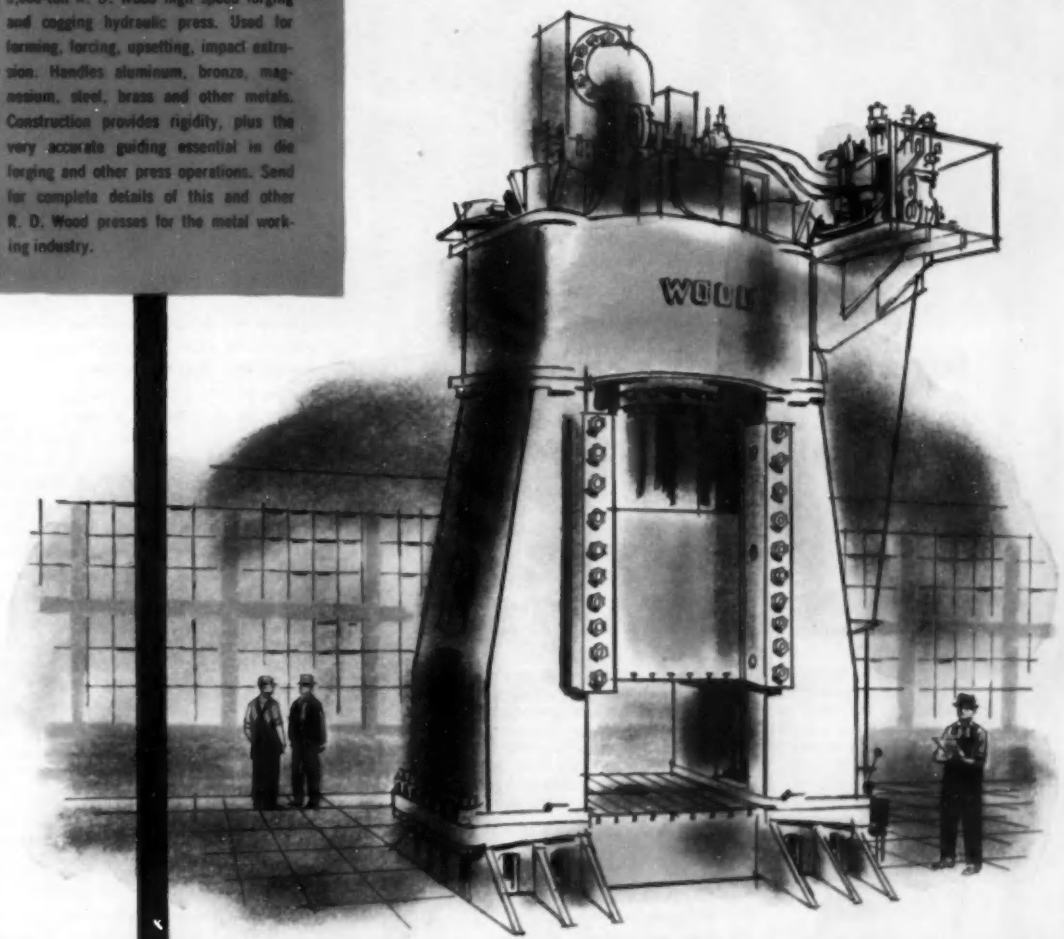
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materials for construction of aircraft tooling: assembly fixture, bending form, checking fixture, drop hammer die, drill fixture, drill jig, double action dies, hydro press form, locating fixture, router form fixture, spinning form, stretch dies, spotweld fixtures, tracing pattern, and welding fixture.

W. Brandt Goldsworthy, Industrial Plastics Co., Gardena, Calif., says that the automobile industry is taking a realistic approach to the use of reinforced plastics. Rather than putting so much emphasis on sports cars, they seem to be getting more and more into limited production type applications such as ambulances, station wagons, fire engines, and trucks. There's definitely an upswing in that direction. Plastic tooling fits in where conventional tooling would be prohibitive costwise for the few units produced. Relatively low initial tooling costs with plastics are a big advantage.

Use of reinforced plastics could make possible yearly style changes in trucks. Other economical applications would be for fabrication of specialized delivery trucks and fleet production. The heavy trucking industry is another potential field for reinforced plastics. Lightweight body panels and cabs would mean increased payloads for carriers.

"There should be a decided effort made by the reinforced plastics industry to establish a standard method of securing tool costs. One new method which could be implemented at this time is the initiation of a standard mold data information sheet supplied by the molder to the mold maker at the time the molder requests a quotation on a given tool from the mold maker. Such a mold data sheet would create a definite, clear base from which everybody could work. This would be important, too, for the engineer in helping him to cut tooling costs by cutting the time to get a job started." This was the view of John C. Moricoli, sales manager, Plastic Mold Division of The C. L. Gougler Machine Co., who talked on "Steel Molds for the Molding of Polyester Resins."

W. E. Glidden, president, Glidden Coating Co., in a paper titled "Sprayed Metal Molds," reported increasingly widespread use of the process in making molds for forming laminates, casting plastisols, and vacuum-forming of sheet stock. Aircraft manufacturers are today building molds to form large radomes, wing tips, complicated ducting, and other components.

"Sprayed metal molds have definite-



Automotive engineers see solution to *low-duty* engine sludge problems

Two new polymeric additives, Du Pont Lube Oil Additives 564 and 565, provide efficient low-duty detergency and V.I. improvement

For several years, there have been effective lube oil detergents for heavy-duty operation . . . but no additive that would economically overcome low-duty sludge problems.

Yet, for 48% of American passenger cars, the average trip is less than 4 miles. For 75%, it is less than 10 miles. And for all city buses, taxis and delivery trucks, more than 90% of their total operation is in local stop-and-go traffic. These low-power, low-temperature operating conditions lead to excessive build-up of engine sludge.

Double Action

After many years of research on this problem, Du Pont has developed two entirely new-type synthetic detergents . . . Lube Oil Additives 564 and 565. Both are *polymeric* additives that provide an economical and effective means of preventing engine oil sludge . . . particularly under low-duty, stop-and-go driving conditions. And both do double duty as detergents and V. I. improvers.

Du Pont Lube Oil Additive 564 has a relatively *low molecular weight*. It provides motor oils with *good shear stability* as well as viscosity index improvement, coupled with outstanding detergency.

Du Pont Lube Oil Additive 565 has a relatively *high molecular weight* and provides greater *viscosity index improvement*, along with equally outstanding detergency under low-duty driving conditions. These characteristics enable refiners to make multi-graded oils of superior quality at lower cost.

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These new ashless polymeric additives permit more efficient operation of the engine oil system. Oil screens, rings, pistons, filters and other engine parts are kept clean and free from sludge. The resulting free flow of oil throughout the entire engine keeps it in better operating condition for longer periods.

Developing new additives for improved fuel and lubricant performance is a continuing project of the Du Pont Petroleum Laboratory. And these two new lube oil additives are among the latest results of this project. For more complete details, ask for a copy of "Du Pont Lube Oil Additives 564 and 565." Address your request to any of our regional offices listed below.

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ly been accepted as a method of tooling in the forming of laminates by bag and vacuum molding. The advantages of sprayed-metal—low initial cost, speed of fabrication, lightweight, and good heat transmission—lend themselves readily to this method of fabrication. In matched molds for press work, there is a place for sprayed metal molds, and we expect to see considerable progress in this direction," Mr. Glidden said.

N. Mark Hastings, chief chemist, Rezolin, Inc., talking on the progress of plastic tooling by the use of adequate control, suggested suppliers of plastics should assume the leadership and responsibility in providing needed information. He thought data should be made available which would assure the manufacture of tools with predictable properties; aid in the indoctrination of all users of tool plastics in proper preventive measures for the reduction of the incidence of industrial dermatitis; and erase the false belief that industrial dermatitis is synonymous with tool plastics.

Mr. Hastings said, "To attain adequate quality controls it is suggested that tool shops establish a system which will include the following:

(1) Buyer buys materials to orders placed by manufacturing from sources shown in Buyer's Guide.
(2) Received materials are released by the inspector, if they conform to requirements of material specifications.
(3) Manufacturing to use only approved and released materials; manufactured in accordance with procedures of process specifications, blueprints and other authorities; using process controls (time, temperature, formulas, mixing procedures, etc.) and process equipment as specified.
(4) Inspection to assure that unauthorized materials are not in the shop; that authorized materials and processes are used; that all processing equipment is working per requirements; that proper process controls are maintained, and that the finished tool conforms to the product specification and blueprint requirements.

"The above controls will in themselves reduce hazards and occurrences of industrial dermatitis by assuring that only tested and approved materials are in the shops.



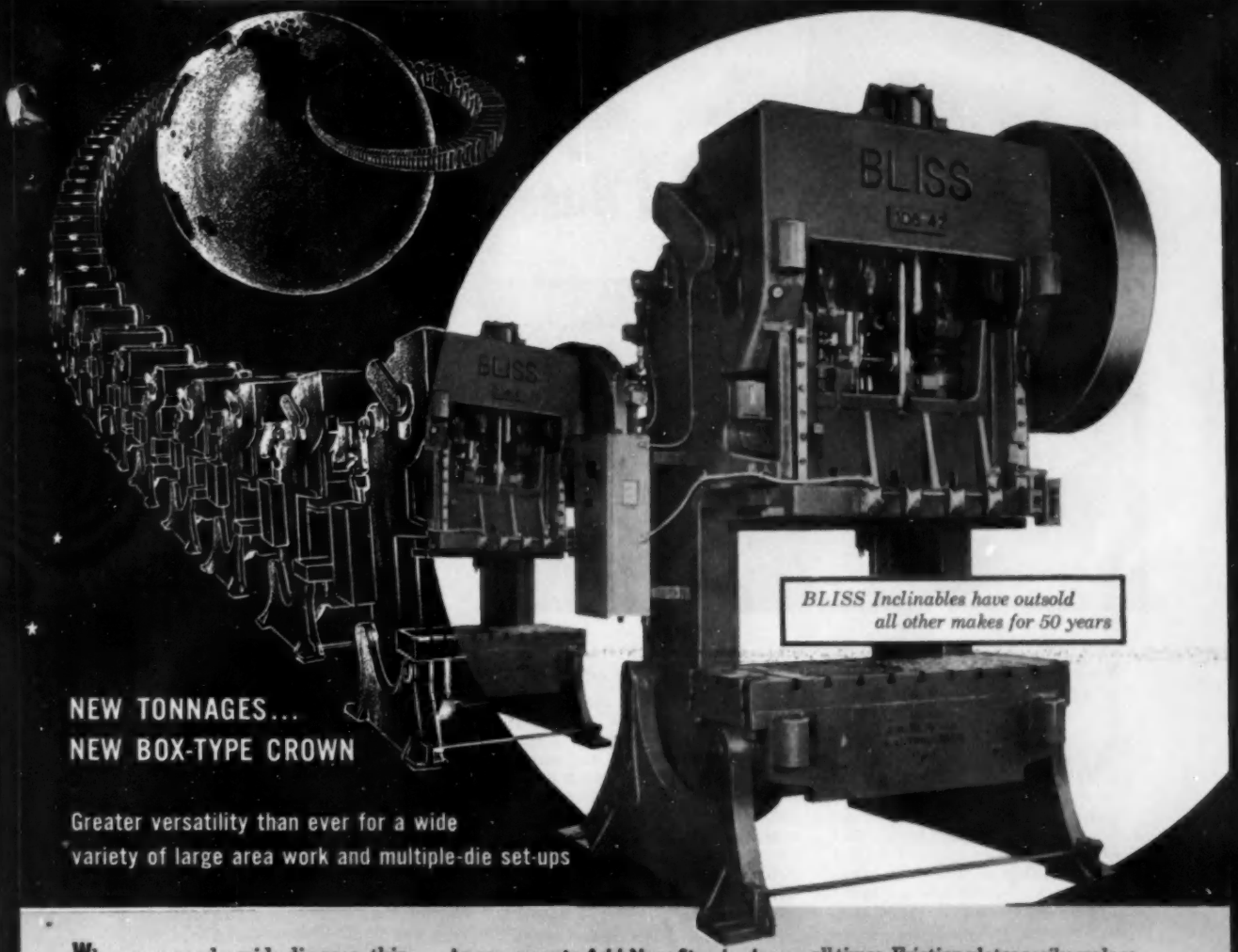
BOOKS ...

REPORT ON THE ELEVATED TEMPERATURE PROPERTIES OF SELECTED SUPER-STRENGTH ALLOYS, *published by American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. Price, $4.75.* This is the third in a current series of reports prepared under the auspices of the Data and Publications Panel of the ASTM-ASME Joint Committee on the Effect of Temperature on the Properties of Metals. Primarily, this report is a graphic summary of the elevated-temperature strength data for 13 selected super-strength alloys. Included are 116 summary curves showing tensile strength; 0.2 per cent offset yield strength; per cent elongation and reduction of area; stresses for rupture in 100, 1000, 10,000, and 100,000 hr when available; and stresses of creep rates of 1 per cent in 10,000 and 100,000 hr. Original data sheets (206 of them) appear in the body of the report directly following the curves. A brief description of each alloy is included which gives chemical composition, recommended heat treatment, and a few words about forging and machining.

HOW TO GET THE MOST OUT OF OUR STREETS, *published by U. S. Chamber of Commerce, 1615 H St., N.W., Washington 6, D. C. Price, $1.00.* This booklet deals with the major headache of America's cities today—overcrowded streets. The growing urban traffic jam is a problem of serious proportions and one that requires remedial action on many fronts. The publishers hope that one of the most effective approaches to the problem will be found in the proven techniques outlined in this publication.

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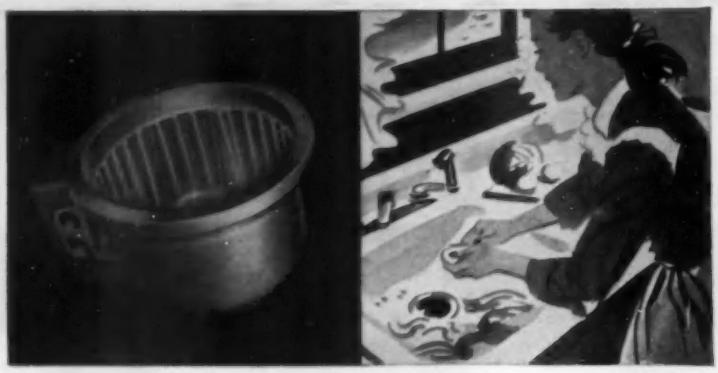
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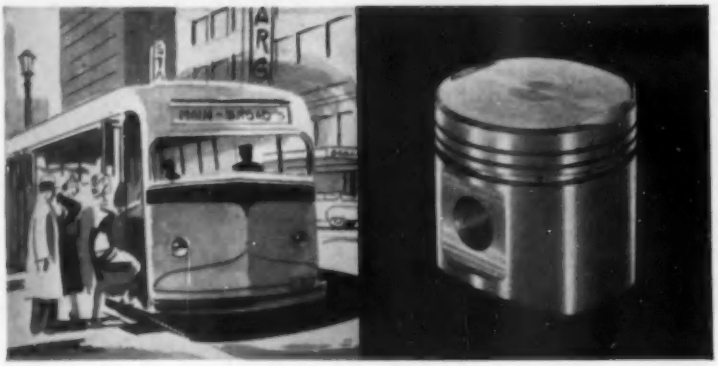
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New Defense Facilities

SUPPLEMENTING the list of Certificates of Necessity issued up to January 12, 1955, authorizing new or expanded defense plant facilities for the manufacture of automotive and aviation war goods which was published in the February 15 issue, page 156, of AUTOMOTIVE INDUSTRIES, the following additional certificates were announced by the Office of Defense Mobilization, covering the period from January 13 to February 9, 1955.

The figure appearing in parentheses is the percentage authorized in respect to actual fast tax write-offs.

AEROJET-GENERAL CORP., Azusa, Calif.
Components for military end items—$517,989 (50)

AUSTENAL LABORATORIES, INC., Rockaway, N. J.
Military aircraft components—$1,214,310 (65)

THE CESSNA AIRCRAFT CO., Wichita, Kan.
Military aircraft—$125,000 (60)
Military aircraft—$190,000 (60)

CURTISS-WRIGHT CORP., Wright Aeronautical Div., Wood-Ridge, N. J.
Military aircraft engines—$283,438 (60)

DOUGLAS AIRCRAFT COMPANY, INC., Santa Monica, Calif.
Military aircraft—$290,000 (60)

ETHYL CORPORATION, Baton Rouge, La.
Research and development—$450,000 (40)

ETHYL CORPORATION, Ferndale, Mich.
Research and development—$650,000 (40)

GENERAL DYNAMICS CORP., Convair Div., San Diego, Calif.
Research and development—$300,000 (60)

LOCKHEED AIRCRAFT CORP., Burbank, Calif.
Military aircraft—$105,868 (65)

LORD MANUFACTURING COMPANY, Erie, Pa.
Aircraft parts—$98,587 (70)

H. W. LOUD MACHINE WORKS, INC., Pomona, Calif.
Military aircraft parts—$741,414 (70)

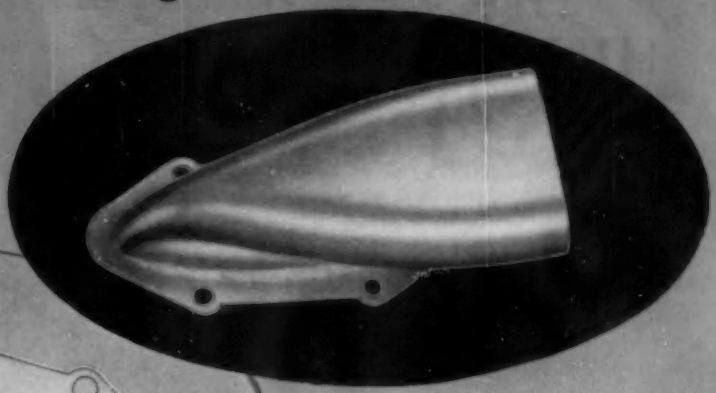
NORTHROP AIRCRAFT, INC., Hawthorne, Calif.
Military aircraft—$90,000 (60)

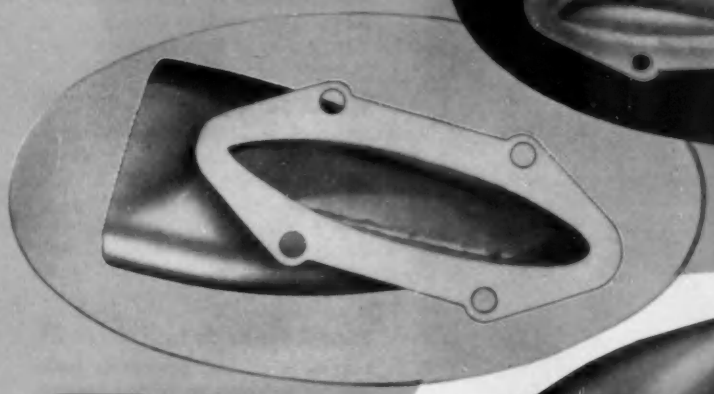
PHEOLL MANUFACTURING CO., Frankfort, Mich.
Components for military end items—$114,321 (65)

REPUBLIC AVIATION CORP., Farmingdale, L. I., N. Y.
Military aircraft—$3,150,000 (55)

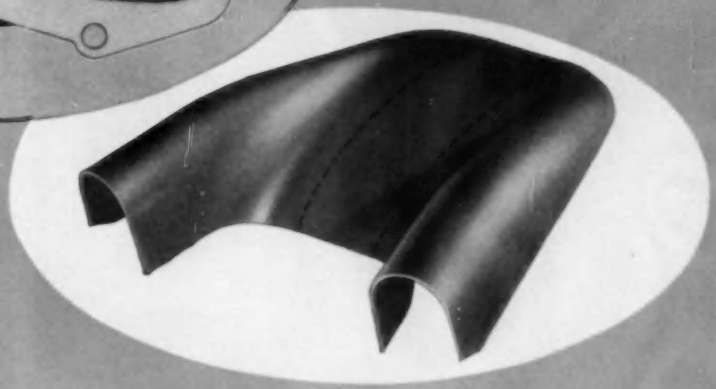
UNITED AIRCRAFT CORP., Pratt & Whitney Aircraft Div., E. Hartford, Conn.
Military aircraft engines—$960,000 (65)

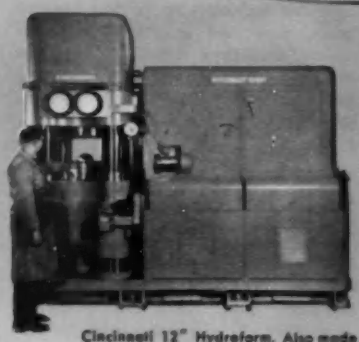
the answer to this tough one . . .





Two views of a jet engine component produced from the Hydroformed blank shown in the photo below. Material is 0.048" Chromaloy. Part length is 5¾".





Cincinnati 12" Hydroform. Also made in 8", 19", 23", 26", and 32" sizes.

was Hydroforming

The manufacturer who contracted to supply this jet engine component certainly got the job off to a good start. It was well planned throughout. The finished shape was to be obtained by drawing a blank of 0.048" Chromaloy to the required contours so that by cutting the part lengthwise, a right-hand and left-hand section would be produced. The sections, plus a stamped flange, were to be assembled by welding.

The shape of the punch was accurately developed and draw press tools were made. Then the trouble started. The available equipment would not form a satisfactory part. And time was getting short.

So the manufacturer shipped the punch and material to the nearest Cincinnati 12" Hydroform. The blanks were quickly drawn to shape—and the jet engine builder received the required number of parts on time.

Manufacturers who have invested in Hydroforming have been rapidly repaid in shortened part development time, in greatly reduced tool expense, in the elimination of operations, in part quality improvement. Let a Cincinnati Milling field engineer give you complete details. For a description of the Hydroforming process and specifications of the six machine sizes, write for Bulletin M-1759-3.

CINCINNATI **Hydroform**

PROCESS MACHINERY DIVISION
THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO, U. S. A.

Free LITERATURE

(*Continued from page* 356)

Torque Strain Gages 17

SR-4 Torquemeters and their applications are described in 12-page bulletin 4308. Eight torque pickups, 0-100 to 0-30,000 in.-lb, and five types of instruments, including manual null balancing and automatic indicators and recorders, are described and illustrated. *Baldwin-Lima-Hamilton Corp.*

Cleaning and Finishing 18

Dealing with the wet abrasive blasting process, 18-page bulletin 541-D booklet presents 10 applications, and describes the process in which water-suspended abrasives are thrown at high velocity upon the work. Tolerances of 0.0001 in. can be maintained on work where necessary, according to *American Wheelabrator & Equipment Co.*

Titanium Tube 19

Up-to-date information on the fabrication of unalloyed titanium tubing is given in eight-page bulletin 43. Subjects covered include heat treating, pickling, welding, brazing and machining. Some applications are pictured. Data on tubing available, and properties of titanium are included. *Superior Tube Co.*

Metal Stripping 20

Enstrips are materials for selective stripping of one metal from another. Eight types for various base metals are discussed, and a handy chart is given to enable easy selection of the proper stripper for any particular job. *Enthone, Inc.*

Worm Gear Sets 21

Worm gear sets, previously made only for inclusion in its own reducer units, now are available to other users. Standard ratios range from 4⅛ to 71. Illustrated, 24-page catalog SW-1 with ratings and specifications is available on request to *Foote Bros. Gear and Machine Corp.*

Torque Converters 22

Three new models of single stage torque converter couplings are announced for application to industrial machines and materials handling equipment. They are designed for engines developing 180 to 225 lb-ft of torque governed at 2000-2200 rpm or higher, and vary in the type of output shaft. *Fuller Mfg. Co.*

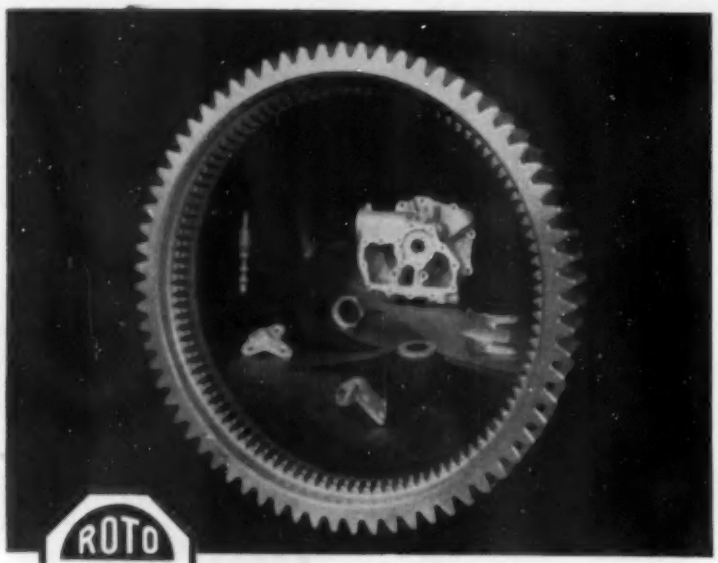
Low Pressure Cylinders 23

As the first step in re-cataloging its various lines of air or hydraulic cylinders and valves, catalog 101 devoted to low pressure cylinders, 650 psi maximum is available from the Nopak Div. of *Galland-Henning Mfg. Co.*

Stamping Plant 24

Facilities for stamping, drawing, forming and heading in its new 150,000 sq ft fabricating plant will be among the most modern in the industry, according to a catalog of *The Plume & Atwood Manufacturing Co.*

(*Turn to page* 443, *please*)



ROTO FINISH

it's the finish that counts!

Roto-Finish maintains exact tolerances on precision parts with no significant dimensional changes. It makes possible a wide range of finishes applicable to parts of almost any size or shape; finishes a variety of materials — at big savings in manpower and costs. Without obligation, send sample unfinished parts to us. Include finished part for guide and your specifications. Roto-Finish will finish parts in its laboratory. You get a complete process report. You are guaranteed results and a finish that counts!

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Originators of the Roto-Finish Process

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Phone 3-3578

Free LITERATURE

(*Continued from page* 442)

Selecting Carbides 25

The 24-page publication "Selection of Carboloy Grades and Suggested Speeds" points out that proper understanding of various grades of carbides for cutting metals, fibers, plastics and rubber results in better finishes, greater accuracy and longer tool life. Issued as a supplement to section 3 of tool manual GT-191, the publication includes data for determining efficient cutting speeds for machining steel, cast iron and nonferrous materials, calculating machine horsepower, determining carbide grades by characteristics, and selecting rake and relief angles of carbide tools. *Carboloy Div., General Electric Co.*

Drilling Machine 26

The Hi-Eff sensitive precision drilling machine is offered in two series, 11 and 20-in. center distance in various speed ranges. *Taylor Dynamometer & Machine Co.*

Teflon 27

An exhaustive description of the properties, uses and processing techniques for Teflon tetrafluorethylene resin is available in a 60-page book, A-8165, from *Du Pont, Polychemicals Dept.*

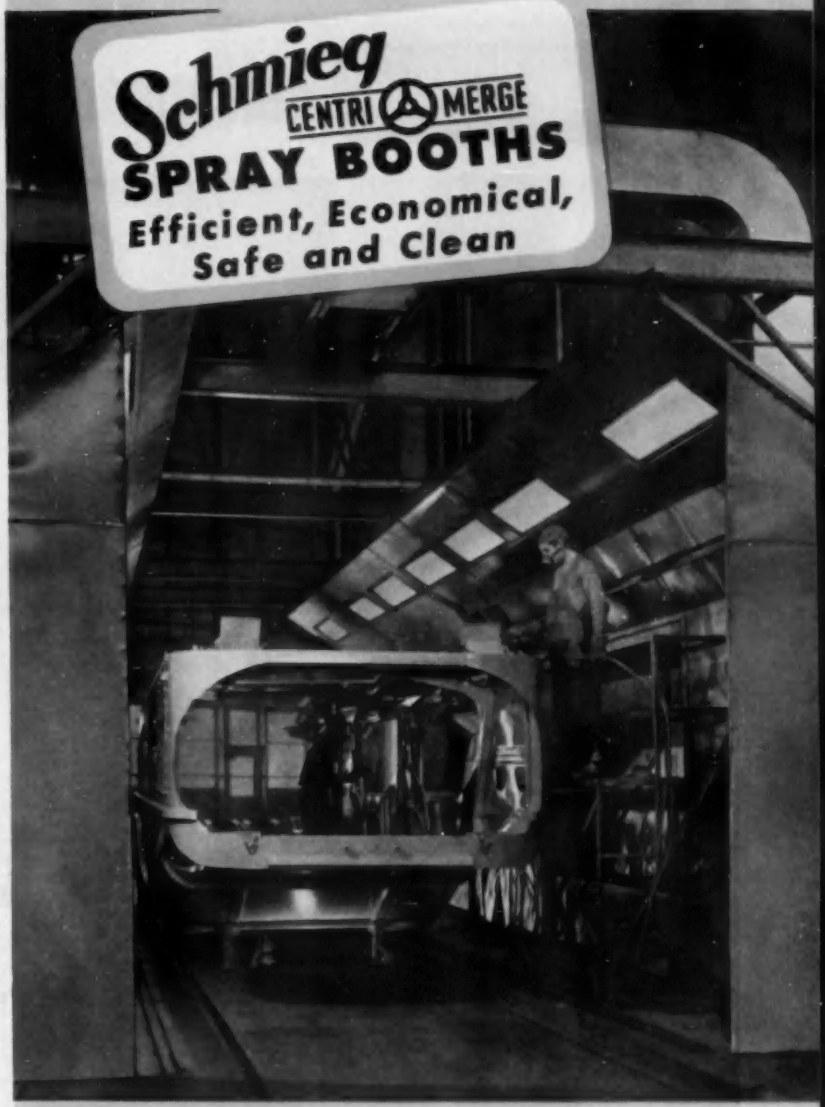
Index Table 28

The Intermittor standard precision index tables for high speed production is described in catalog No. 300 which contains assembly drawings, load ratings and dimensions of over 150 models, and data on the Roller Gear Drive indexing mechanism. Standard index tables are available with four to 36 work stations; dial sizes range from 12 to 48 in. Production speeds of 30,000 pieces per hour are attained on some units. *Ferguson Machine & Tool Co.*

Subminiature Switches 29

Small snap-action precision switches, auxiliary actuators, subminiature switches, toggle and push

(*Turn to page* 446, *please*)



Illustrated is a large haulaway truck in a *Schmieg Centri-Merge Spray Booth* designed and engineered to meet the most exacting operational requirement, which quickly demonstrates its superiority in the elimination of overspray.

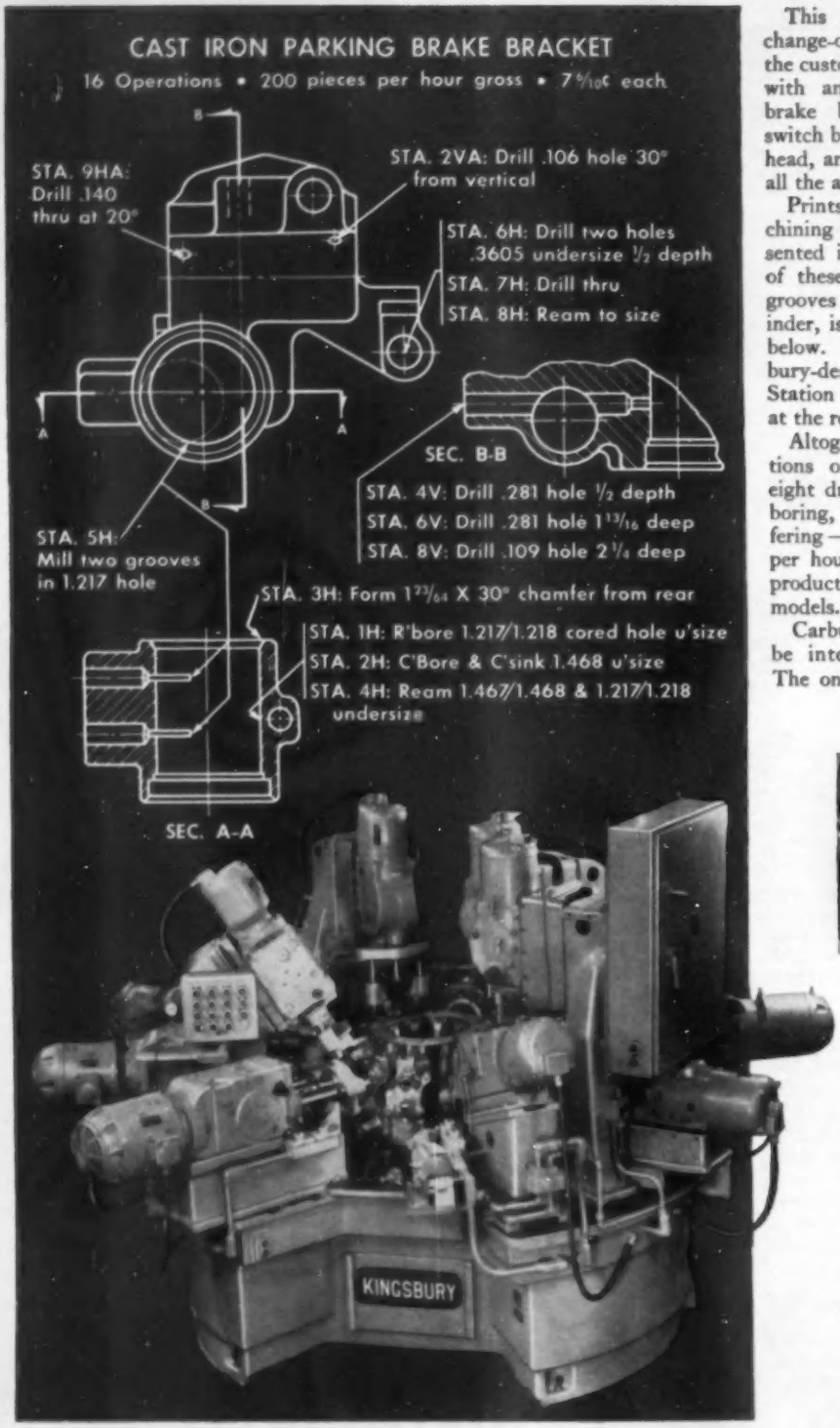
Pigment and impurities are driven from the air stream by *Schmieg Centri-Merge* in a literal whirling tornado of water, removing the hazards of spray painting, giving top operational efficiency for many years at lowest maintenance cost.

When you are considering the installation of Spray Booths, Dust and Fume Control Equipment, Mechanical Washers, Industrial Ovens and Production Finishing Systems, be sure to call Schmieg engineers *first*.

THE best AIR PURGE is CENTRI MERGE

Schmieg INDUSTRIES INC.
Engineers & Manufacturers
DETROIT, MICHIGAN
P. O. ADDRESS: 23930 SHERWOOD, CENTER LINE, MICH.

"Operations Kingsbury" can mean greater production

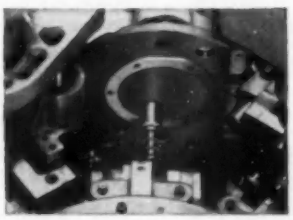


This Kingsbury Machine has change-over features which enable the customer to go into production with any one of *four* different brake bracket bodies. Selector switch buttons for each Kingsbury head, and simple tool settings are all the adjustments needed.

Prints called for certain machining operations which also presented interesting problems. One of these, requiring twin slots or grooves within the arc of the cylinder, is illustrated and described below. Another employs a Kingsbury-designed recessing tool at Station 3 to form a 30° chamfer at the rear of the cylinder . . .

Altogether, there are 16 operations on the part shown here: eight drilling, three reaming, two boring, two milling and one chamfering — a total of 3,200 operations per hour gross for low-cost, high production — on any one of four models.

Carburetor bodies, also, must be interchangeable throughout. The one on the right is. In the



Section A-A at left shows the tool diameter and location of two grooves or slots milled in the arc of the cylinder wall and connecting with two ports. The operation is performed at Station 5. A horizontal unit with a special head advances the tool into the bore, feeds the twin-milling cutters with an oscillating motion and withdraws the tool — all within the machine time-cycle of 18 seconds.

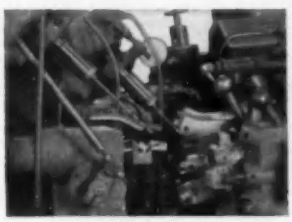
and model changeover savings for you. . .

brief interval it spends in the Kingsbury machine, it is worked upon at 11 stations where 12 operations are performed. One of these involves an interesting bushing mechanism illustrated and described below.

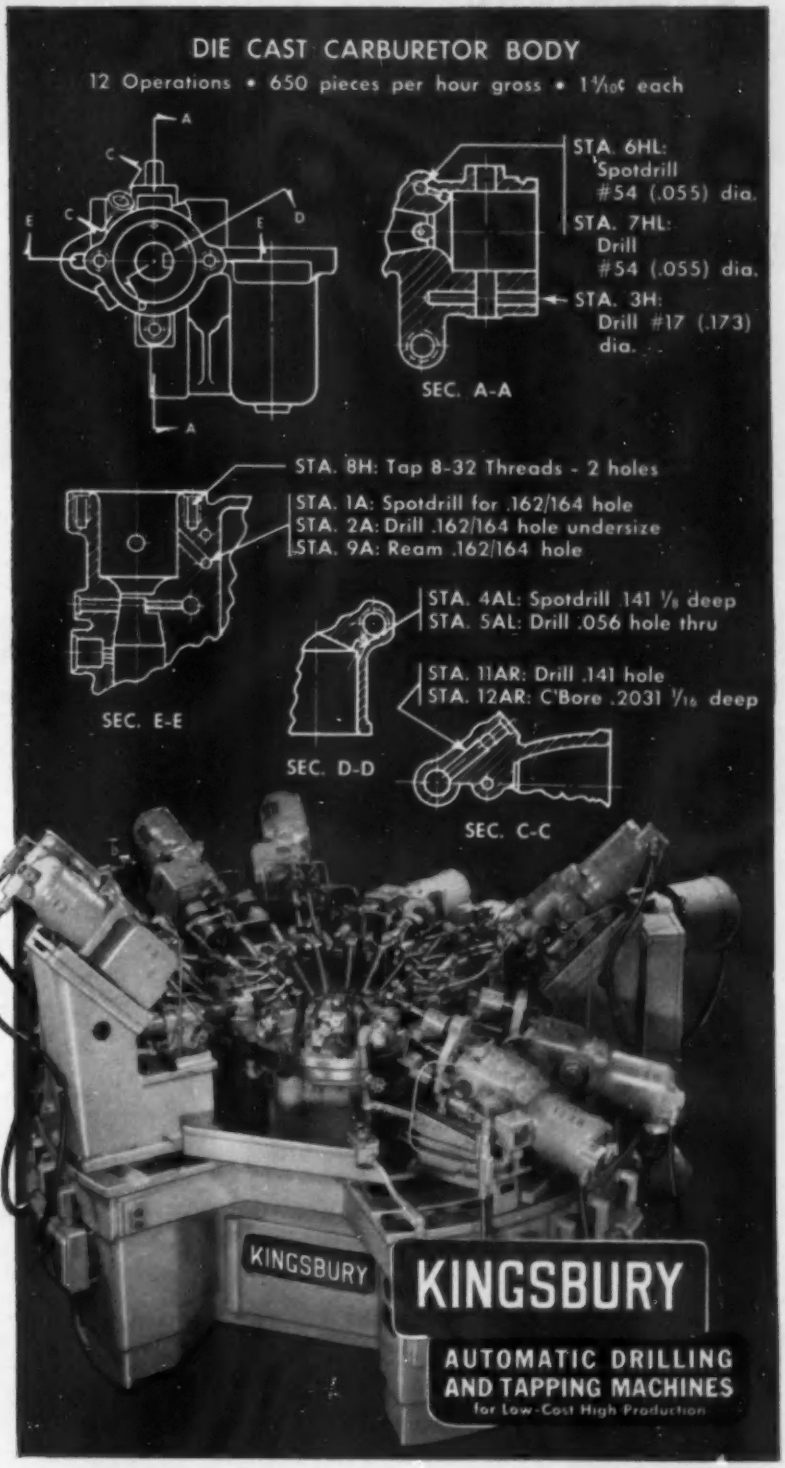
★ ★

There's something quite *sure* about a Kingsbury. It's more than dependable heads, index mechanism, synchronized safety control system, cutting tool guide methods . . . a combination of all these, with work-holding fixtures specially designed and built for each part . . . by men who know how and like the challenge of this work. With more than 5,000 successful Kingsburys behind us you can feel quite sure that if we feel it's a Kingsbury job, a Kingsbury machine will do it well.

Kingsbury Machine Tool Corp.
109 Laurel Street, Keene, N. H.



Section E-E at right shows location of a hole reamed .162/.164 at an angle of 45° with the inner bore of a larger hole. The operation is performed at Station 1 where a cam-controlled horizontal plug-type bushing carrier places an angular tool guide bushing inside the bore for the ⅜ spot drill. All this is accomplished in about four seconds!



Free LITERATURE

(*Continued from page 443*)

button subminiature switch assemblies are covered in catalog No. 75, which gives complete information on the standard Subminiature (single-pole, double-throw) basic switch as well as the long life, high temperature and turret terminal versions. Auxiliary actuators are shown, as are groups of single-hole bushing-mounting toggle switches, push button switches, and other types. *Micro Switch, Div. of Minneapolis - Honeywell Regulator Co.*

Speed Drive 30

Dynaspede liquid cooled, eddy-current stationary field power transmission devices, with no rotating electrical components, are said to be adaptable to most adjustable speed requirements for constant or variable torque and constant horsepower loads. Small excitation demands adapt the Dynaspede Coupling to all types of electronic or magnetic amplifier controls to accomplish most industrial processing requirements. A 12-page booklet, SF1, contains complete information. *Dynamatic Div., Eaton Manufacturing Co.*



This Staples Carbide-Tipped Shell Type Expansion Reamer has won unchallenged leadership for low cost, high precision reaming in mass production. In automotive, aircraft engine, household appliance, farm machinery and many other metalworking industries, this Staples tool is daily proving its ability to produce close tolerance, fine finish work at exceptional tool cost savings.

When the tool wears undersize, it can be accu*rately* expanded to original diameter by driving the shell up the tapered arbor. After repeated sharpening and expansion, the tool is returned to new condition simply by replacing the worn shell—a standard stock item.

Enthusiastic comments from many manufacturers attest to the real savings this Staples Reamer produces. Try it on your production lines. Your inquiry will bring a prompt response.

Staples CARBIDE-TIPPED CUTTING TOOLS

A complete line of Circular Carbide-Tipped Tools, Expansion Reamers—Special Tools

THE STAPLES TOOL COMPANY

CINCINNATI 25, OHIO

Sine Plates, Chucks 31

Sine angle plates and sine angle magnetic chucks are pictured for setting up angular work for machining or inspection operations. They are available in either the simple or compound angle models; the sine angle magnetic chuck models can be furnished with a Superpower electromagnetic or permanent magnet chuck, as desired. Catalog No. 812. *The Taft-Peirce Manufacturing Co.*

Rubber Fender 32

In the current issue of Rubber Developments, a quarterly devoted to rubber advances, the Dunlop Research Centre announces a new compounding technique for rubber fenders. They can be made lighter than before and are less expensive, the report says. A flexible paint can be supplied for brush or spray application which gives results comparable with the cellulose finishes used on metal. Rubber is combined chemically with phenolic resin. *Natural Rubber Bureau.*

Hydraulic Drive 33

The ¾ hp variable speed hydraulic transmission for industrial application is described in bulletin 47-40B, which outlines operational advantages and design features of the Series TR3 variable speed transmission and presents a chart of output speed ranges for various recommended input speeds. Also included are installation drawings for both handwheel controlled and servo controlled models. *Vickers, Inc.*

Subcontracting 34

High precision subcontract work on light through medium-heavy lines is solicited in an illustrated four-page folder which describes the facilities available for rough castings only, or fully machined, heat-treated and incorporated into assemblies. Equipment roster of the machine shops is included. *New York Air Brake Co., Watertown Div.*

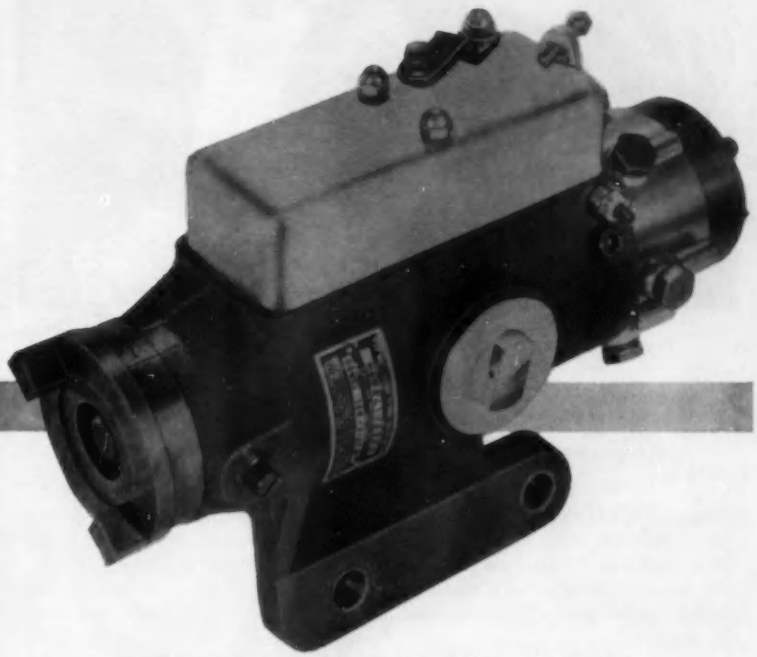
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THE MODERN FUEL INJECTION PUMP

MAKES GOOD DIESELS BETTER

GENERAL FEATURES

- PERFORMANCE-PROVEN LIFE
- SMALL, COMPACT, LIGHTWEIGHT
- EASY TO SERVICE
- LOW MAINTENANCE COST
- EASY TO INSTALL
- OPERATES IN ANY POSITION
- EXTREMELY CLOSE SPEED REGULATION
- SMOOTH PERFORMANCE AT LOW IDLING SPEEDS



CONSTRUCTION FEATURES

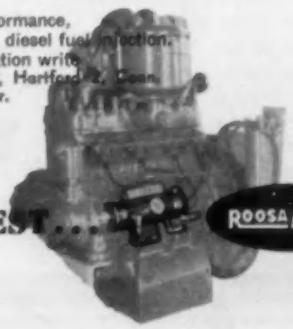
- SINGLE ADJUSTMENT REQUIRED
- BUILT-IN GOVERNOR AND TRANSFER PUMP
- COMPLETELY SELF-LUBRICATING, OIL FILLED
- CALIBRATION INHERENT IN DESIGN
- NO POPPET VALVES
- NO COMPLICATED SPRINGS
- NO GEARS • NO BALL BEARINGS
- NO ROTATING, SPRING-LOADED, LAPPED SURFACES.

A revolutionary contribution to better and simplified diesel fuel injection, Roosa Master offers to both diesel engine manufacturers and users advanced features found in no other fuel injection pump.

Roosa Master, perfected after 15 years of engineering and research, is designed for use with all major types of high speed diesel engines . . . interchangeable with most existing fuel injection equipment.

Roosa Master is manufactured by Hartford Machine Screw Company, one of New England's leading manufacturers of precision machined products, and backed by a 75-year-old tradition of integrity and dependable customer service.

For the best in diesel engine performance, specify Roosa Master, the best in diesel fuel injection. For literature and further information write Hartford Machine Screw Company, Hartford 2, Conn. or consult your engine manufacturer.



DIESEL FUEL INJECTION AT ITS VERY BEST . . .

ROOSA MASTER

Clamp power to production



Models MTU (above, left) and MTS (above, right) Multiple Plate Clutches are available in dry or oil types. Sizes 3" to 12", working capacities .47 to 44 hp per 100 rpm. Request Bulletin 134-B.

Design Twin Disc Models MTU, MTS Multiple Plate Clutches into your machines . . . *and you provide the capacity to effectively transmit higher loads required for maximum production.*

With comparatively *low* pressure on the control lever, Twin Disc Multiple Plate Clutches provide *high* clamping efficiency. Add their *short* travel, and you have minimum clutch length . . . *permitting high torque capacity to be designed into minimum space.* To maintain high torque capacity, the Models MTU, MTS feature materials with high friction coefficient, plus an ample number of friction surfaces.

Also important, Twin Disc Multiple Plate Clutches permit higher speeds of rotation, for their operating mechanism is designed to be *unaffected* by centrifugal action. Adjustment is single-point for time-saving simplicity. All sliding surfaces are specially hardened to eliminate possibility of scoring parts.

Whatever your requirement, Twin Disc can provide the right type, right size Multiple Plate Clutches for greater efficiency. The Models MTU (duplex) and MTS (single) are mechanically-actuated. New Twin Disc Models MOD (duplex) and MOS (single) Multiple Plate Clutches are oil-actuated, with the floating or pressure plate acting as the cylinder ram.

Be sure to write Twin Disc Clutch Company, Racine, Wisc. today for detailed information.

TWIN DISC

TWIN DISC

Friction Clutches and Fluid Drives

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

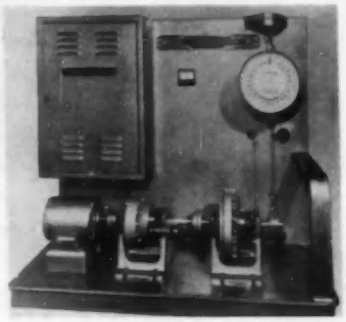
Branches or Sales Engineering Offices: Cleveland • Dallas • Detroit • Los Angeles • Newark • New Orleans • Seattle • Tulsa

New Production EQUIPMENT

(*Continued from page* 354)

Variable Drive

The IVC power transmission is a package unit to give variable speed output from a constant speed source, while transmitting constant torque. It is made up of an electromagnetic clutch, magnetic amplifier control and power supply, speed set station, and



tachometer generator. Although designed for conveyors, it is said to have many other applications. Two sizes are rated at one to five hp or 180 in.-lb torque output, and five to 25 hp or 700 in.-lb torque, when powered by a 1750-rpm a-c motor.

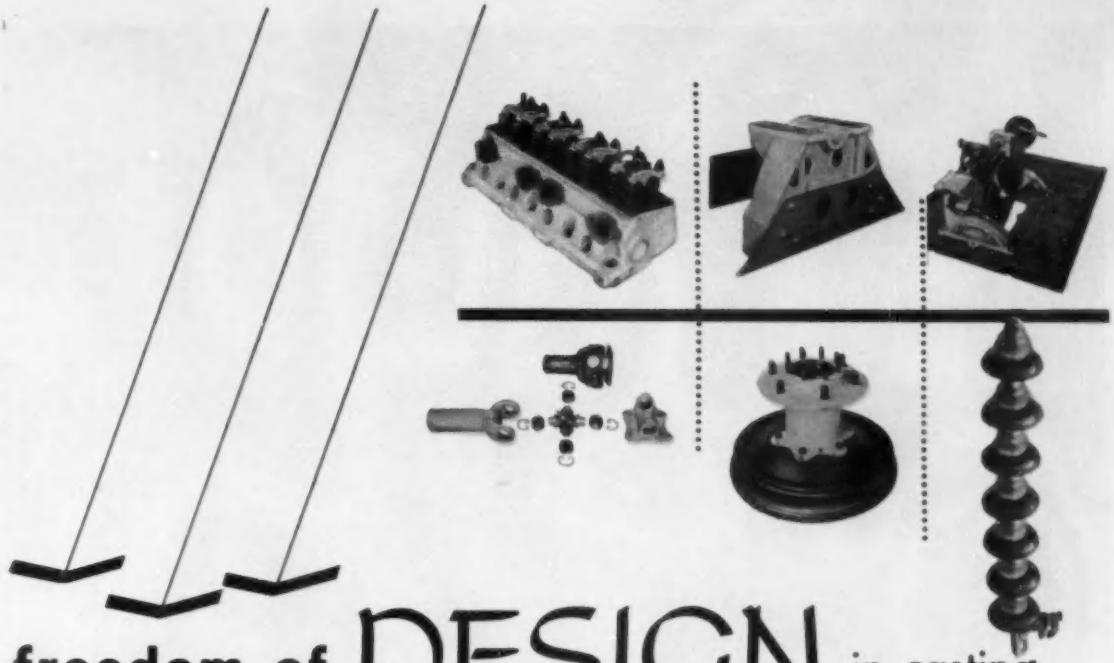
Speed ratios from 10 to 1 to as high as 100 to 1 are infinitely variable throughout the torque limits. Full torque stops, and adjustable torque limits are features. On multi-drive installations, one unit can act as the master, with other units balancing out and pulling equally as the load varies. The device, which has been used on the firm's line of conveyors, now is offered separately. *Mechanical Handling Systems, Inc.*

Circle 43 on postcard for more data

Pressure Booster

A continuous-action, automatically reciprocating air-hydraulic booster is designed to deliver an unlimited amount of high pressure fluid for the operation of hydraulic cylinders. It operates from ordinary plant compressor air input. While it does not build up its pressure nor discharge its oil as fast as the company's single acting B4 Boosters, the unit is said to offer advantages and cost-savings in applications where large volumes

(*Turn to page* 452, *please*)



freedom of DESIGN in casting



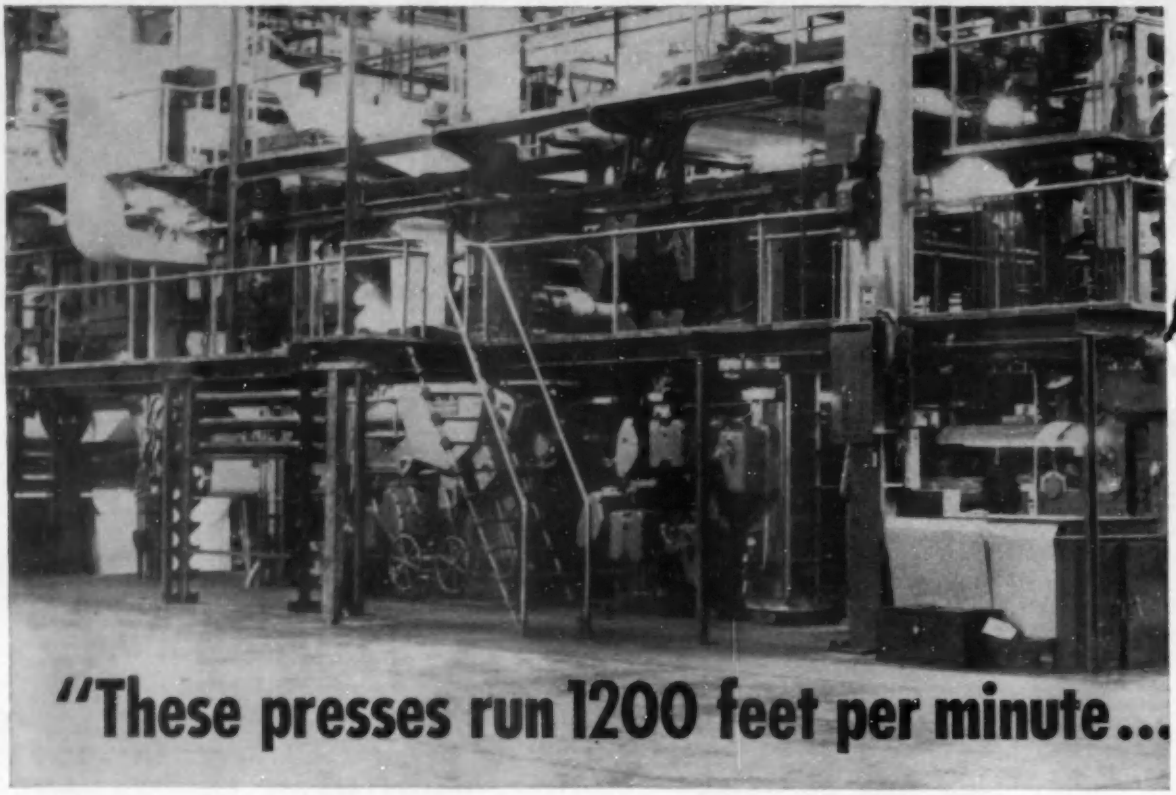
MALLEABLE IRON CAN BE EASILY **cast** *INTO THE INTRICATE SHAPES AND DESIGNS REQUIRED BY MODERN* ***HIGH PRODUCTION*** *METHODS*

We have just one point to make . . . there is no engineering substitute for good, accurate, dependable castings! There is no practical way to put metal where it is wanted . . . so accurately and at so little cost!

When it comes to the casting of ferritic and pearlitic malleable irons, one name means the most to the men who buy . . . *Albion Malleable Iron* . . . the foundry supplying every major requirement in processes, equipment and service.

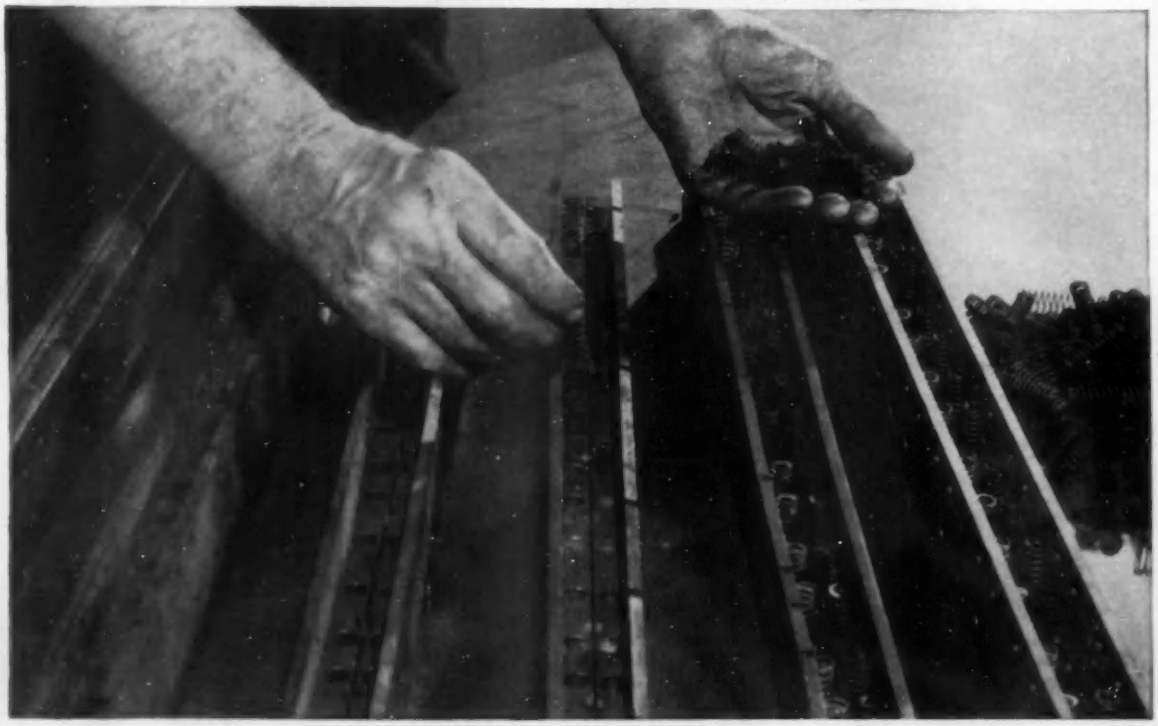
Make *malleable* iron, the versatile metal, a part of your product. Contact your *Albion Malleable Iron Company* representative now, he will be glad to bring you up to date on the rapid development in casting techniques and advantages that are yours for the asking.

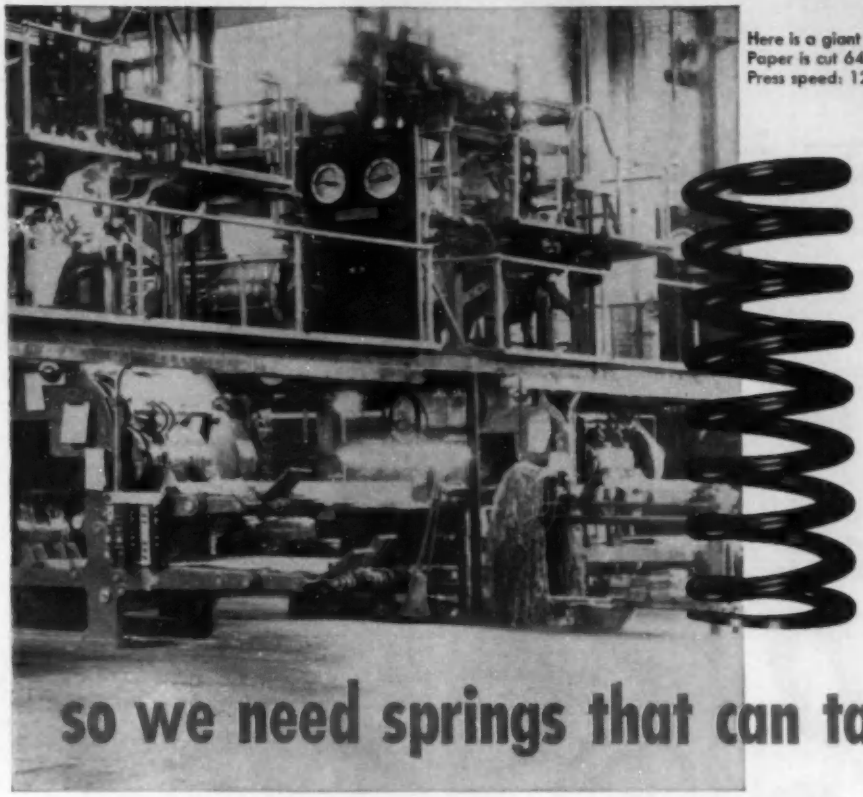
albion malleable iron company
ALBION, MICHIGAN



"These presses run 1200 feet per minute...

Cutting knife enters the slot visible in these knife assemblies. Springs maintain pressure on the paper during cut.





Here is a giant multicolor magazine press in action. Paper is cut 640 times per minute. Press speed: 1200 feet per minute.

so we need springs that can take it"

says Goss Printing Press Company, world's largest manufacturer of newspaper, magazine and rotogravure presses

● 74% of the world's daily newspapers are printed on Goss equipment. Some of the presses are nearly a city block long—giant, roaring machines that gobble up newsprint at the rate of 1200 to 2000 feet per minute. Many of the largest magazines also are printed on Goss presses, which run up to 1200 feet per minute.

At one end of the press is the cutting cylinder, where the paper is cut "on the run." 640 times a minute, the sharp steel knife snaps in and out between two spring loaded fibre "cushions" that hold the paper against the cutting cylinder. When the knife retracts, the springs push the cushions back out of the way.

According to Mr. William Zimmer, Asst. Chief Engineer, "Inferior springs would fail, jam the cutting cylinders, wedge the folding mechanism, and cause severe damage. I don't think that a spring could have a tougher job; but we've been using American Quality Springs for 20 years with excellent results."

American Quality Springs are available in any size, any quantity, any steel, style or finish—including flat wire and special shapes. Just get in touch with your American Steel & Wire representative.

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS American Quality Springs

USS

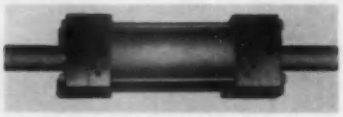
UNITED STATES STEEL

New Production EQUIPMENT

(*Continued from page* 448)

of high pressure fluid are required. It consists of a double-rod end air cylinder with a hydraulic discharge pressure chamber at each end. Thus, it delivers a pressure output stroke in both directions.

At the end of each stroke, the piston assembly contacts an actuator button on the inside of the cylinder.

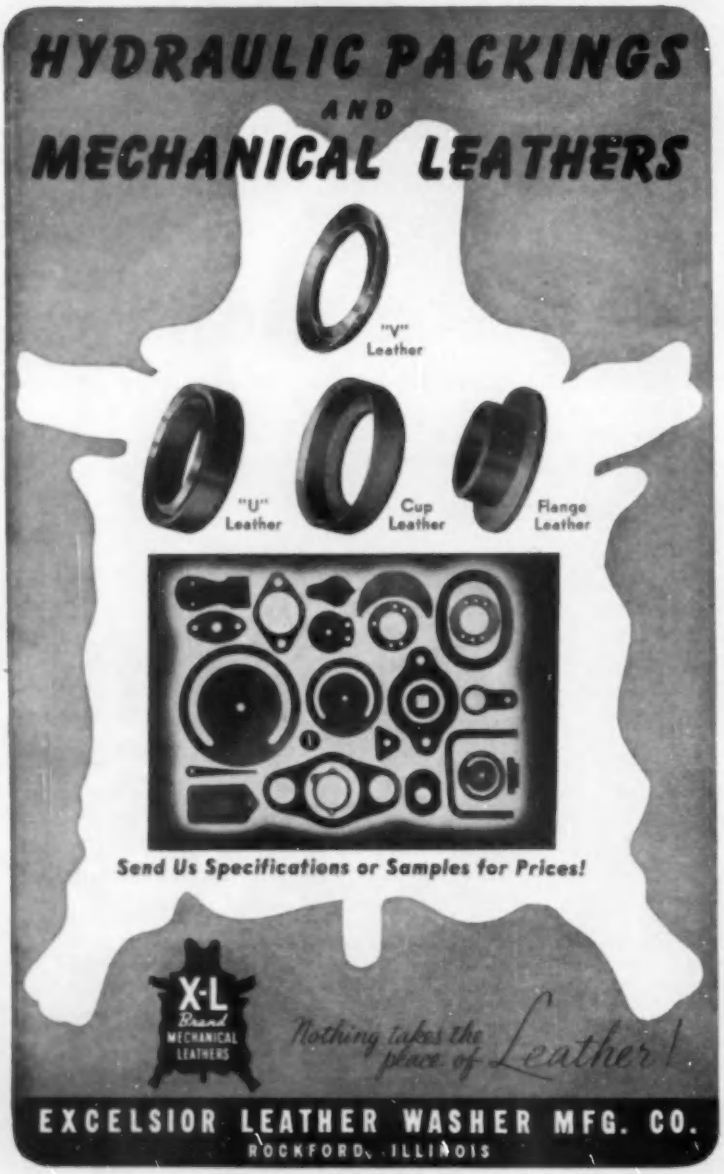


This shifts the position of a four-way, two-position, double pilot operated valve causing reversal of air flow and corresponding reversal of booster stroke.

It is available in all ratios to give pressures to 10,000 psi and over. The booster is being stocked in 25 to 1 ratio units that produce 2000 psi hydraulic output from 80 psi air input. This model consists of a five-in. diameter air piston driving two one-in. diameter hydraulic rams, each ram having a stroke of six in., and a 4.7-cu in. oil displacement per stroke or 9.4 cu in. per cycle.

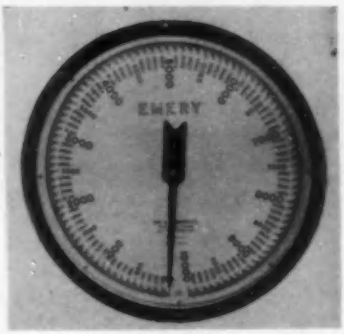
It is especially recommended for operations requiring high holding pressure without generating heat or wear and without consuming power. It is also well adapted for handling special output fluids. *Miller Fluid Power Co.*

Circle 44 on postcard for more data



Large Gage

To provide increased accuracy, greater visibility, and easier reading of pressure, production of a new 19½-in. Bourdon pressure gage is reveal-



ed. When used with Emery load cells, it provides guaranteed accuracy of ± two per cent of load range. Its bifocal pointer and high visibility dial permit simplified reading from a distance or close to the indicator. The dial scales are individually calibrated at twenty different points. Pointer zeroing is accomplished with a special locking knob that provides stable zero settings over 20 per cent of the dial range. Lead ranges up to 100,000 lb are available. *A. H. Emery Co.*

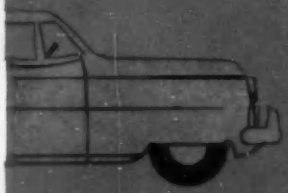
Circle 45 on postcard for more data

Unique Guide Pin

This removable cap guide pin is designed to eliminate punch holder binding in separating die sets. The punch holder is readily freed on the upper-most part of the pins where it is most apt to tilt and bind. The cap is removed from the guide pin by loosening a socket head screw which holds it in place. This screw rotates in a collar and serves as a jack for the cap. The new hardened guide pin

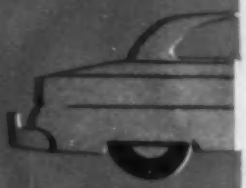
(*Turn to page* 454, *please*)

more cars and trucks



are factory-equipped

with FRAM



than any other make

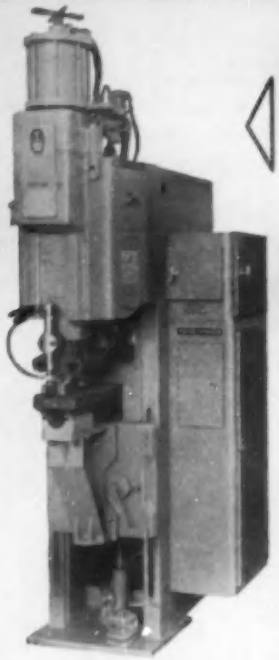
OVER 150 LEADING MANUFACTURERS SPECIFY FRAM AS STANDARD EQUIPMENT

Year after year, FRAM leads the industry in design, development and production of finer filtration systems. This FRAM leadership can help solve your problem in oil, air, fuel or water filtration. FRAM engineering facilities, including the FRAM Dust Tunnel at Dexter, Michigan, are at your disposal.

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FRAM
OIL • AIR • FUEL • WATER
FILTERS

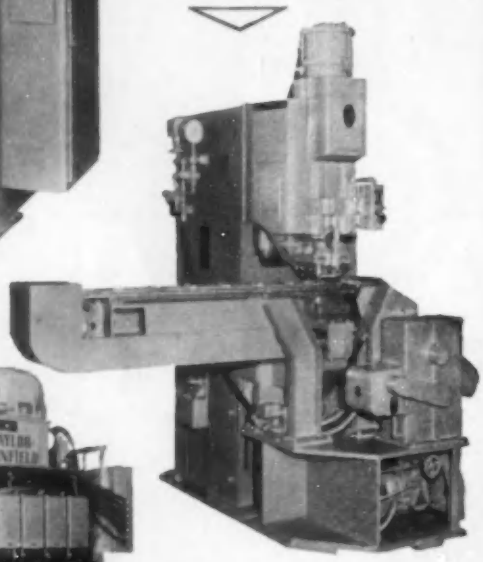


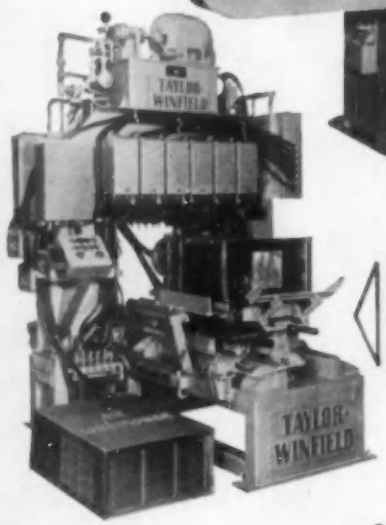
A STANDARD T-W RESISTANCE WELDER

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Special tooling; mechanized loading and unloading; increased production; low cost re-tooling.





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OAKVILLE AND WINDSOR, ONTARIO

TAYLOR-WINFIELD
RESISTANCE WELDERS

THE TAYLOR-WINFIELD CORPORATION WARREN, OHIO

New Production EQUIPMENT

(*Continued from page* 452)

is precision made throughout. The body of the pin is ground to plus 0.0005 in., minus 0.0000 in. A taper seat is ground on the upper part of this unit to receive the removable cap.



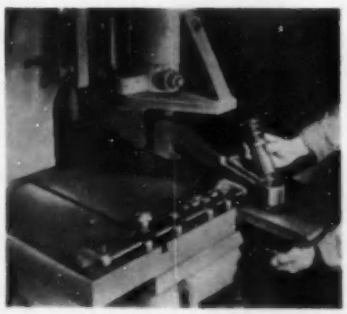
A hole is drilled and tapped in the top of the pin for the socket head jack screw. A matching internal taper is ground in the removable cap so that the part can be readily assembled to the pin. An additional feature in the structure of this new guide pin, provides for replacement of only the cap when pins wear because of long press runs. *Superior Steel Products Corp.*

Circle 46 on postcard for more data

Converts to Punch

Announcement of the Quick-Change Press Punching and Gauging Accessory, known as the "PPG Group," has

(*Turn to page* 456, *please*)



Fishtail...



New anti-rattle fastener for NAMEPLATES and trim holds threadless studs

Quick, tight, permanent fastening for name-plates and other die-cast trim is now possible without nuts and washers, thanks to United-Carr's Fishtail fastener.

Easily attached with simple hand tools, its teeth actually bite into chrome-finished, threadless studs so that there is no chance of slippage or looseness.





Fishtail's grip on welded, staked or extruded studs is independent of the pressure of the spring take-up legs. Leg pressure, however, allows positioning adjustments while it provides secure anchorage even when the studs protrude through oversize holes.

Fishtail fasteners can be used on flat or contoured surfaces and their cup-shaped centers hold and retain sealing compounds.

Like thousands of other fasteners and allied devices, designed and manufactured by United-Carr, Fishtail fasteners help speed assembly and cut costs. Available in a complete range of sizes and in volume quantities; further details on request.

UNITED-CARR

MAKERS OF DOT FASTENERS

UNITED-CARR FASTENER CORPORATION, CAMBRIDGE 42, MASSACHUSETTS

New Production EQUIPMENT

(*Continued from page* 454)

just been made. It converts open back presses into a versatile hole punching machine with 20-second punch and die change. The entire self-contained assembly is placed on the press bed. Nothing is attached to press ram. The only function of the ram is to depress the punch.

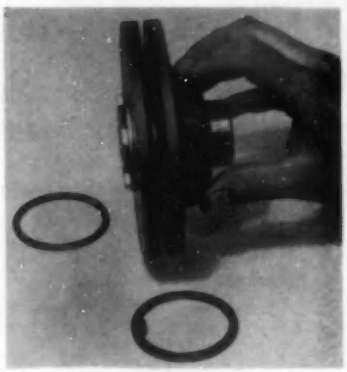
The device consists of a steel bedplate, quick-change holder, 18-in. back gage bar, 18-in. stop support rail and combination auxiliary cabinet and tool rack. The 14 drawers hold graduated punch and die sizes from 3/32 to 1¼ in. diameter.

To interchange punches and dies for various hole diameters the operator pulls the holder base forward to clear bedplate; strikes the punch head by hand to release spring ball-held die which drops down and is caught in hand; punch is removed by simply lifting out of holder. *Wales-Strippit Corp.*

Circle 47 on postcard for more data

Limits Torque

Machinery drive overload protection devices feature high-friction asbestos-phenolic-brass chip molded friction disks and a new adjusting nut locking arrangement. They are slip-type friction clutch devices upon which such drive components as standard Type A plain plate roller chain sprockets, special V-belt pulleys or gears can be mounted. They act as automatic shear pin mechanisms. The drive component is mounted on a powdered metal bushing in the Torque Limiter unit and clamped between two friction disks by the action of an adjustable Bellville spring. When an overload is imposed on a machinery drive, the sprocket or related drive



component breaks away from the clutch disks and slips at from one half to one third the torque setting until the motor is shut off and the overload condition is corrected. No resetting is needed to make the Torque Limiter operative after the overload is removed. Capacity ranges from 20 to 620 lb-ft; dimensions are 2 to 3⅞-in. diameter, for ½ to 2½-in. shafts. *Morse Chain Co.*

Circle 48 on postcard for more data

Toggle Clamps

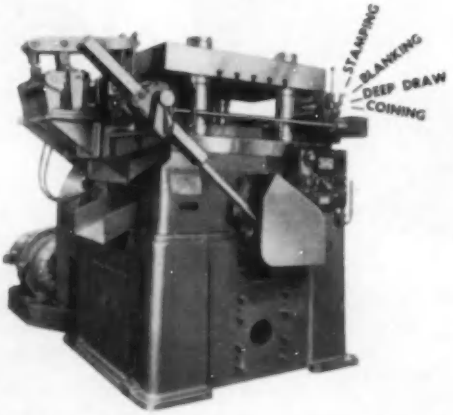
Three "trigger-release" portable plier-type toggle clamps have just been added to the De-Sta-Co line of toggle clamps. This trigger-action enables the operator to hold the work piece with one hand, and clamp and release with the other. A touch of the trigger throws the jaws of these clamps open—ready for the next clamping action.

Models 482, 484 and 486 feature hardened bushings inserted through

(*Turn to page* 458, *please*)

PRECISION — PRODUCTION — PERFECTION

at NO EXTRA COST



THE BRANDES AUTOMATIC PRESS

Features Patented Multiple "V" Guides Assuring Perfect Die Alignment

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Longer Die Life
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WINDSHIELD WIPERS • WINDOW LIFTS • SEAT MOVING MECHANISMS • HUB CAPS
WIRE & CABLE • SPARK PLUGS • METAL FABRICATED ASSEMBLIES • GRAY IRON CASTINGS • ZINC & ALUMINUM BASE DIE CASTINGS

THE ELECTRIC AUTO-LITE COMPANY • TOLEDO 1, OHIO

Simplify your
PREVENTIVE MAINTENANCE
with

MARVEL SYNCLINAL FILTERS

FOR ALL HYDRAULIC AND OTHER LOW PRESSURE CIRCULATING SYSTEMS

Simple, Efficient Design Reduces Demand on Your Skilled Maintenance Help



SUMP TYPE (Cutaway)

Any workman can disassemble, clean and reassemble Marvel Synclinal Filters. Cleaning is done quickly, and Marvel's extra capacity requires less frequent cleanings. This means more production per machine with less man hours. Marvel protected machines spend their time producing, not in being serviced and repaired. Marvel's simple efficiency changes down-time to producing time.

STANDARDIZE WITH MARVELS — CHOICE OF OVER 500 ORIGINAL EQUIPMENT MANUFACTURERS

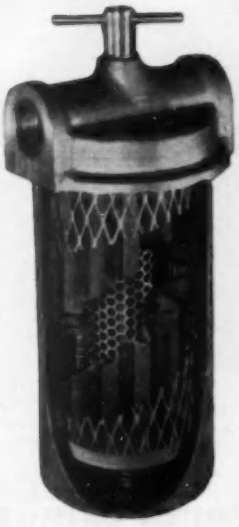
Improve your all-important preventive maintenance by simplifying it. Use Marvel Synclinal Filters throughout your plant. Specify Marvel on new machines, add Marvel to present machines. No moving parts to wear, nothing to keep in stock. Your first cost is your only cost.

A SIZE FOR EVERY NEED

Available in sump and line types, in capacities from 5 to 100 G.P.M. Monel mesh sizes range from coarse 30 to fine 200.

FILTERS FOR ALL TYPES OF NON-FLAMMABLE HYDRAULIC FLUIDS

Marvel's most recent development is a filter for the efficient filtration of all types of non-flammable hydraulic fluids.



LINE TYPE (Cutaway)

WATER FILTERS

Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, Balanced Synclinal Design.

IMMEDIATE DELIVERY

As in the past, Marvel continues to offer IMMEDIATE DELIVERY.



Catalogs containing complete data available on request

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Without obligation, please send me complete data on Marvel Synclinal Filters, as follows:—

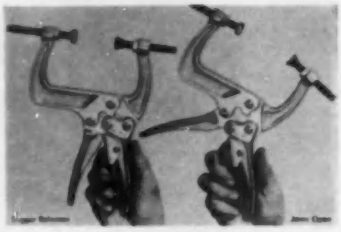
- ☐ Catalog #106—For Hydraulic Oils, Coolants and Lubricants
- ☐ Catalog #300—For WATER
- ☐ Data on filters for Non-flammable hydraulic fluids.

Name .....
Title .....
Company .....
Address .....
City .....
State .....

AI-3

New Production EQUIPMENT

(*Continued from page* 456)

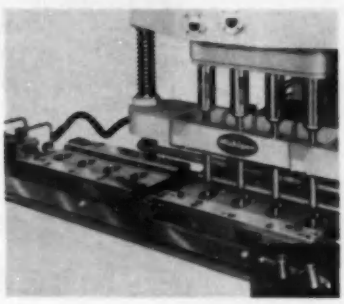


the forged components. Thus, the complete bearing surfaces are of hardened metal. This construction is designed for a minimum of 135,000 clamping and unclamping cycles under a 600-pound pressure. The forged components are heat-treated and drawn. These clamps may be readily drilled or altered to fit any specific application. *Detroit Stamping Co.*

Circle 49 on postcard for more data

Shuttle Fixture

Rocker arm shaft holes are finish reamed at 1200 pieces per hour on a two-station shuttle fixture, mounted



on a Standard Hydro 5 machine. Interchangeable nesting plates will fit the fixture. A pilot on the reamer picks up the part location prior to actual sizing. Finished pieces are ejected automatically. Coolant is supplied to each spindle, and all parts are lubricated automatically. It is built to JIC standards. *Michigan Drill Head Co.*

Circle 50 on postcard for more data

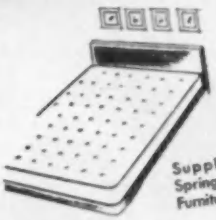
Small Motors

A redesigned line of small fractional horsepower single-phase motors, ¼-hp and smaller, is announced.

(*Turn to page* 462, *please*)

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Symbol of Service for 48 years . . .





Supplier of Inner Coil Spring Units to Mattress and Furniture Manufacturers.

Supplier of "Star Service" All Wire and "Paper-Strut" Garment Hangers to Cleaners and Dyers.



Supplier of Brake, Clutch, Valve, and Other Mechanical Springs to the Automotive and Other Industries.



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L. A. YOUNG SPRING & WIRE CORPORATION

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Spicer comes through in the long



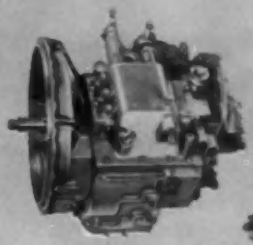
Spicer

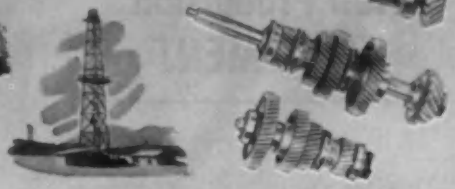
DANA CORPORATION

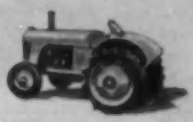
SPICER PRODUCTS: TRANSMISSIONS • UNIVERSAL JOINTS • PROPELLER SHAFTS • AXLES • TORQUE CONVERTERS • GEAR BOXES • POWER TAKE-OFFS • POWER TAKE-OFF JOINTS • RAIL CAR DRIVES • RAILWAY GENERATOR DRIVES • STAMPINGS • SPICER and AUBURN CLUTCHES • PARISH FRAMES

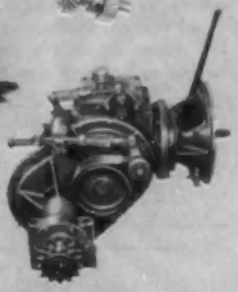
haul...



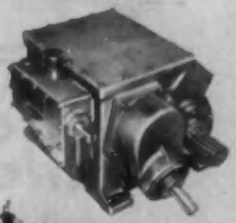














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During its 50 years of advancement in power transmission science, Spicer has produced gear designs that serve many different and difficult needs.

For instance, the 3-mile long aerial tramway to timberline of famous Mount Hood (Oregon) is driven through a transmission system especially developed by Spicer. In the oil fields of the world, Spicer equipment is used to deliver power to the many different types of equipment that serve this giant industry. Spicer Generator Drives assure continuous electrical energy for thousands of local and transcontinental trains on every continent. Spicer units are used in many forms for power transmission in millions of motor vehicles the world over.

On land . . . in the air . . . and on the water, wherever steady and unfailing delivery of power is absolutely essential, Spicer gears maintain their reputation as

"The Standard of the Industry"

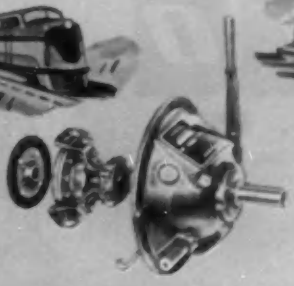


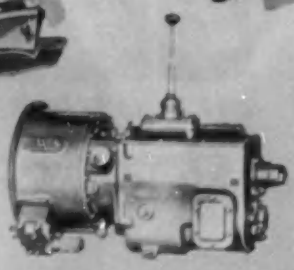












Toledo 1, Ohio

New Production EQUIPMENT

(*Continued from page* 458)

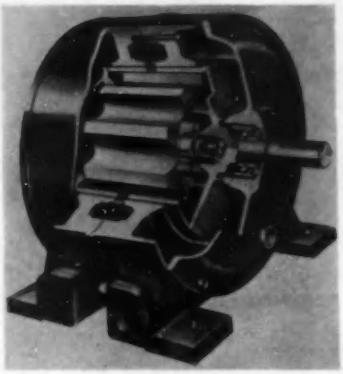


These new capacitor-start and split-phase motors have shallower end-plates to reduce length, with drip-proof ventilating openings located below centerline. Sleeve bearing motors in the new design are lubricated by means of felt packing, cut to specified shapes and inserted in specially designed bearing housings with inner and outer seals. Quick-break switch and thermal overload protector are attached to the terminal board which is mounted inside the stator frame. The terminal board cover can be removed by loosening two screws. These compact motors are available with either sleeve or ball bearings and rigid or resilient bases. Rigid base motors have the base welded directly to the frame. *Wagner Electric Co.*

Circle 51 on postcard for more data

Electric Coupling

The Dynaspede Coupling is a stationary field, liquid cooled, eddy-current adjustable speed power transmission device. Driven by a constant



or variable speed power source, the Dynaspede Coupling delivers torque or speed to suit specific processing requirements. There are no rotating electrical components. Liquid cooling permits a wide speed range at constant or reduced torque and, under certain conditions, constant horsepower. Various controls provide stepless speed control. *Dynamatic Div., Eaton Mfg. Co.*

Circle 52 on postcard for more data

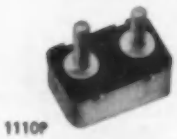
Sealed Switch

The hermetically sealed limit switch formerly an exclusive development for aircraft use, is available for general industrial applications. Because of the absolute seal, lubricating oils, hydraulic fluids collant, dust and dirt cannot enter. It is resistent to terrific heat and sub-sub zero cold. This industrial switch consists of a standard basic switch protected by a sealed housing with integrally mounted actuator. All joints are copper brazed. Vital components are sealed in an inert gas. Electrical rating is 10 amp at 125/250 vdc. and 10 amp at 28 vdc. inductive. *Electro Snap Switch & Mfg. Co.*

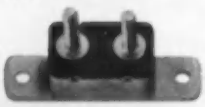
Circle 53 on postcard for more data



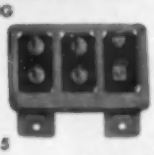
FASCO
AUTOMATIC RESET CIRCUIT BREAKERS



1110P



1110G



1115

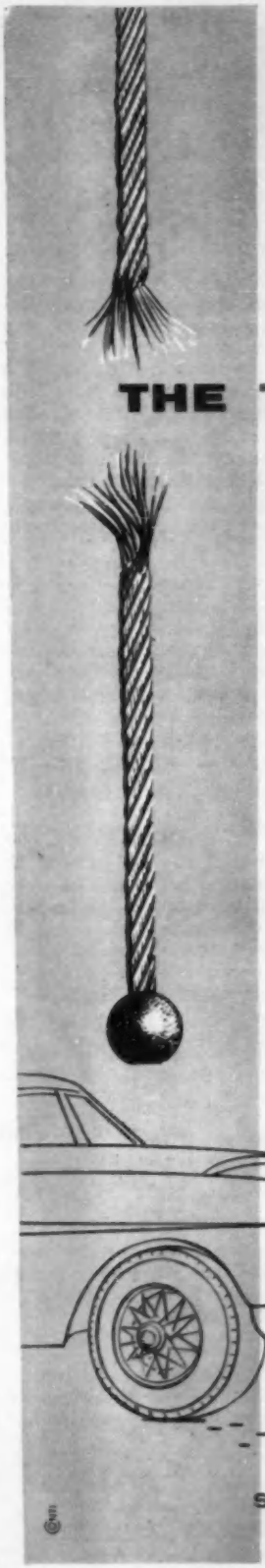
STOP TROUBLE BEFORE IT STARTS!

Instantly . . . automatically . . . without fail . . . these Fasco products protect electrical circuits from overloads and shorts . . . safeguard the operation of low-voltage electrical equipment. Available in 8, 10, 15, 20, 25 or 30 ampere capacities . . . for mounting in 1, 2, 3, 4 or 8-unit FASCO brackets.

When it comes to circuit breakers, the automotive industry has found that it pays to CONSULT FASCO . . . FIRST!

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Leading automotive manufacturers demand maximum performance from their many components—that is why, for many years, they have specified Bergen cables, assemblies and slings for the toughest services. They know from millions of operating miles that Bergen experience, precision manufacturing and quality materials assure lasting dependability under the most adverse conditions.

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- **Quick deliveries of *special constructions* or *short runs*.**
- **Long lasting, dependable service.**



Bergen's rotary swaged fittings prove stronger than high test cable



BERGEN AUTOMOTIVE LITERATURE CAN HELP YOU SOLVE MANY DESIGN PROBLEMS.

Write for a copy today ...

SERVING THE LEADERS OF INDUSTRY

32 Gregg Street, Lodi, New Jersey

AUTOMOTIVE DIVISION

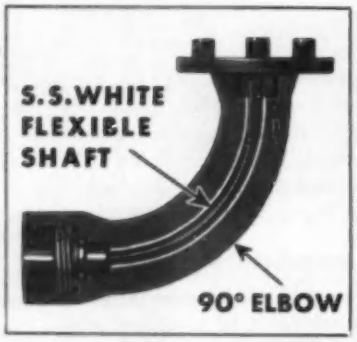
BERGEN

WIRE ROPE COMPANY

COST-SAVING IDEAS FOR DESIGN ENGINEERS

EVEN A SMALL S.S.WHITE FLEXIBLE SHAFT CAN RESULT IN BIG SAVINGS

Illustrated is a cutaway of a truck recorder drive, in which a 3" S.S.White power drive flexible shaft replaced gearing as a means of transmitting power around a 90° turn. The shaft not only saved parts, but it eliminated troublesome breakage caused by excessive friction of the gear train in cold weather.



ECONOMIZE WITH FLEXIBLE SHAFTS

If the products you manufacture include power drives or mechanical control systems, you will find ample cost-saving opportunities in the use of S.S.White flexible shafts for these purposes. S.S.White engineers stand ready to assist you in working out any application you may have.





BULLETIN 5306 gives details on how to select and apply flexible shafts. Send for your copy. Address Dept. B

P-5

THE S.S.White INDUSTRIAL DIVISION
DENTAL MFG. CO.
10 East 40th Street
NEW YORK 16, N. Y.

Western District Office • Times Building, Long Beach, California



ON OUR WASHINGTON WIRE

Effects of present military procurement policies on small concerns making aircraft parts will be the target of an investigation by a subcommittee of the House Small Business Committee. The subcommittee is disturbed by reports that the aircraft parts industry is being damaged by the new "weapons system" of procurement now used by Defense Dept.

Arguing strongly for an end to Federal excise taxes on cars, trucks, and parts is the Automobile Manufacturers Assn. At the very least, AMA tells Congress, tax rates should be lowered from the present 10 per cent to seven per cent on cars and from eight per cent to five per cent on trucks and parts.

Labor's demand for a full-scale congressional investigation of automation is not likely to rate any serious consideration at the Capitol this Spring. However, if unemployment should rise after the mid-year point, the issue may receive spotlight treatment.

Araldite 115, an epoxide resin, may be substituted for soft solder in producing bomb-tail assemblies and save about 50 per cent of the cost of this work, the Army states in a new research report. Copies of the report (Order PB 111445), entitled "Investigation of Adhesives: Metal-to-Metal Bonding," are available at 50¢ per copy from Office of Technical Services, U. S. Commerce Dept., Washington 25, D. C.

Navy Dept. officials are planning to replace most of the obsolete machine tools at Government shipyards within a five-year period. Bureau of Ships has already started to gather information on which of the tools, valued at more than $150 million, should be replaced by new equipment.

Leece-Neville

New Alternator System COSTS NO MORE than d. c. equipment

Completely redesigned from end to end, the new line of Leece-Neville Alternators are priced to make the entire L-N Alternator System . . . Alternator, Rectifier and Regulator . . . cost no more than d.c. equipment of comparable capacity.

ALL THE ADVANTAGES OF ALTERNATORS

The new Leece-Neville Alternators provide the many, well-known advantages over d.c. generators, including:

- Better performance on the vehicle through higher drive ratio. Alternators may be driven up to top bearing speed. See typical curves below.
- No commutator and no heavy current carrying brushes. Rotating field is excited through two small brushes riding on smooth slip rings.
- Unmatched reliability and long, service-free life. Complete overhaul involves just replacing bearings, slip rings and brushes.

TYPICAL LEECE-NEVILLE QUALITY

In redesigning the L-N Alternator for low cost, volume production, nothing has been skimped. Engineering, materials and manufacturing are all up to the high standard that has made *Leece-Neville* synonymous with *quality* since 1909.

FOR 6-VOLT AND 12-VOLT SYSTEMS

The new line of Leece-Neville Alternators includes models for both 6-volt and 12-volt systems, with a choice of two bearing sizes to meet requirements of the application. All four models are on the same frame with identical external dimensions. System includes new, high density rectifier.

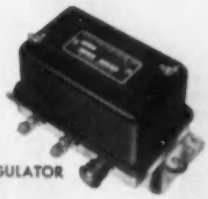
The new line of Leece-Neville Alternators offers the ideal solution for the increasing load of electrical accessories on passenger and commercial vehicles today . . . and tomorrow. For complete data, write The Leece-Neville Company, Cleveland 14, Ohio.



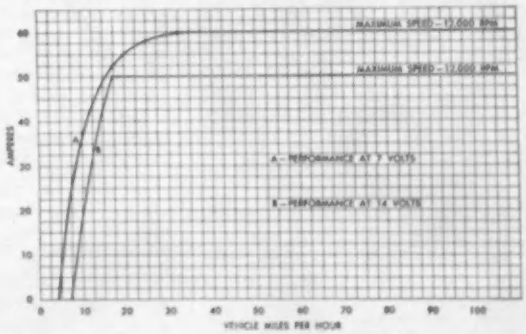
ALTERNATOR



RECTIFIER



REGULATOR



PERFORMANCE AT OPERATING TEMPERATURE

YOU CAN RELY ON Leece-Neville

AUTOMOTIVE ELECTRIC EQUIPMENT SINCE 1909

ALTERNATOR SYSTEMS • GENERATORS • STARTING MOTORS
REGULATORS • SWITCHES • FRACTIONAL HP MOTORS

TRUCK · BUS · DIESEL · OFF-HIGHWAY · PASSENGER · RAILROAD · MARINE · INDUSTRIAL

News of the MACHINERY INDUSTRIES

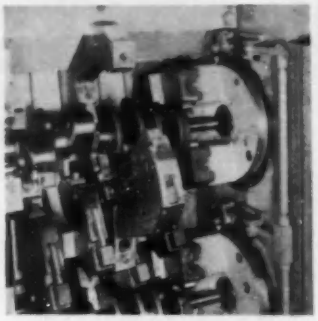
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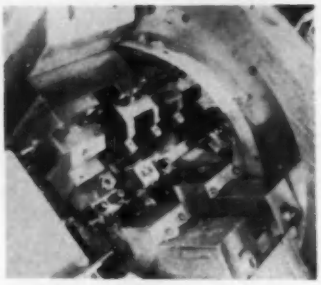
bearings of two crankshafts are turned simultaneously.

According to LeBlond, the high production rate was made possible by the precision shell molding technique by which crankshafts are cast to very close tolerances.

The machine tool builder reports that all machine motions are electrically and hydraulically sequenced for continuous automatic operation. A console type push button operating station includes indicating lights to signal certain conditions throughout the cycle. Naturally, manual control is provided for setup, tool change, repair or adjustment.

Close-up of the cranks and tooling in the LeBlond pin bearing machine is given at the right.





The automatic chuck and tool blocks of the LeBlond line bearing lathe are shown in the close-up, above.

ANOTHER *American* FIRST



3 parts assembled from 3 different angles

IN ONE AUTOMATIC MACHINE OPERATION



Parts magazines (indicated by arrows) are loaded with bushing and plug parts. Push button starts machine cycle, case is automatically clamped, and bushing and two plugs are pressed into case simultaneously by hydraulic cylinders.

Designed for an automotive conveyor-type assembly line, this American Hydraulic Press inserts a bushing and two dowel plugs in an automotive transmission case — all three parts from different angles — in a single, push-button controlled, automatic cycle. It is a typical result of the service that American offers for designing and building automatic assembling and broaching equipment.

American's experience in developing machines for special purpose production operations can be of real value to your planning. Engineering versatility is a proven American asset.

A letter or phone call outlining your requirements will be welcomed — and will produce prompt cooperation.

AMERICAN *American* BROACH & MACHINE CO.

A DIVISION OF SUNDSTRAND MACHINE TOOL CO.

ANN ARBOR, MICHIGAN

SUNDSTRAND

See *American* First — for the Best in Broaching Tools, Broaching Machines, Special Machinery

Snyder Ships Its Largest

Last month, Snyder Tool and Engineering Co., Detroit, delivered the largest center column machine ever built by the company, which is now in its 30th year of business. The eight-station center column unit has a 96-in. table and produces 230 automotive cast iron steering gear housings per hour at 80 per cent efficiency. Cost of the machine was approximately $200,000.

Snyder's latest automation machines represent much engineering thought in the field of cybernation, a word that Snyder's president, Howard N. Maynard, thinks industry will be talking a lot more about in the future as the field of automation expands. The cybernation machines, Mr. Maynard thinks, because of their thought and automatic inspection controls, will ease the work of the operator and simultaneously produce lower cost products of much higher quality with less scrap.

Australian Machine Tool Industry

We have recently received a very interesting report concerning the status of the Australian machine tool industry. This industry comprises

(*Turn to page* 470, *please*)



Holes on extremely close centers vary in diameter from 1/16" to 13/16". The valve body has 33; the cover, 18.



"—BUT OUR PRODUCTION RUN IS LIMITED."

"SO WAS THE RUN ON THIS AUTOMATIC TRANSMISSION PART, BUT". . . .



HERE'S HOW ZAGAR TOOLING SAVED MONEY HAND OVER FIST

This aluminum die casting is processed in its entirety by Zagar planning, except for milling two faces. Two lines of Zagar standardized self-clamping drill jigs ream, tap and drill both valve body and cover. With 24 heads and 24 fixtures, Zagar performs work on 51 holes on close centers. Step tools take care of reaming and burnishing. The fixtures were designed to compensate for slight inaccuracies in the die casting. Thus has Zagar engineering solved an acute problem of limited production without the purchase of costly special machines.



Ask on your letterhead for Bulletin "U-3."

ZAGAR TOOL, INC.

24000 LAKELAND BOULEVARD • CLEVELAND 23, OHIO

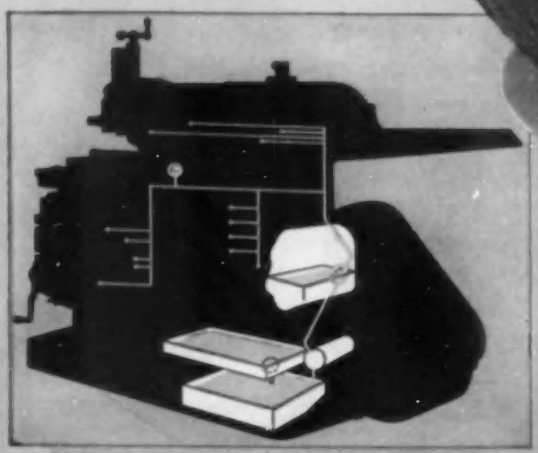
Zagar TOOLS FOR INDUSTRY and SPECIAL MACHINERY

50 lbs. oil pressure

IS NECESSARY WITH A CUT LIKE THIS...

This tremendous cut demonstrates the extra strength, rigidity, and power in Cincinnati Shapers. It also demonstrates the ability of the 50 p.s.i. lubrication system to develop and maintain oil films under the heaviest loads.

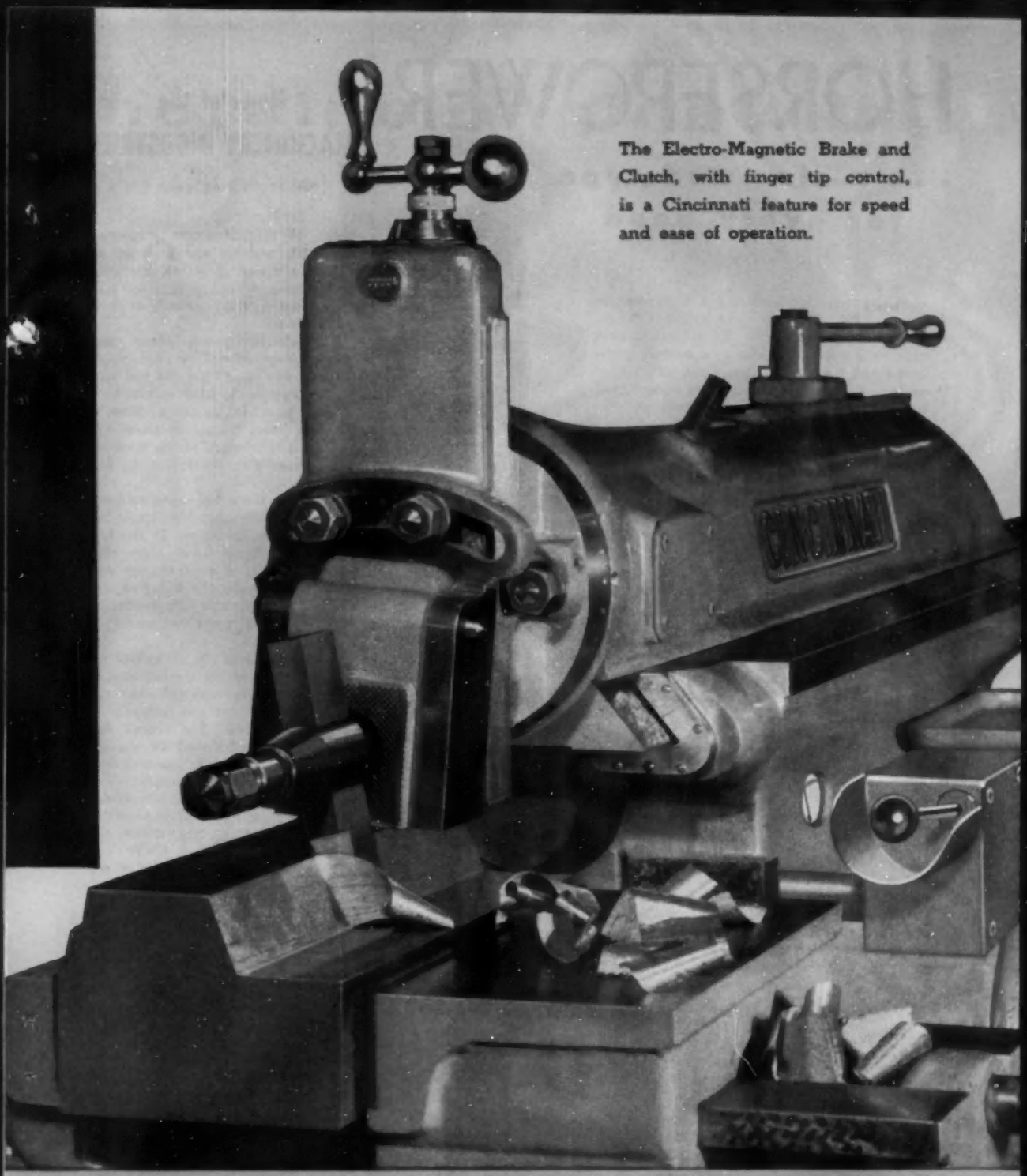
Write for Catalog N-6.



50 p.s.i. system includes 50 micro filter, settling basin and reservoir. Tranamission runs submerged in oil.



Demonstration cut.
Actual size steel chip, 2" cut .030" feed
Cincinnati 24" H.D. Shaper.



The Electro-Magnetic Brake and Clutch, with finger tip control, is a Cincinnati feature for speed and ease of operation.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

CINCINNATI

HORSEPOWER

. . . a size and type for every need

Whether it's repowering old equipment or buying new — too much or too little horsepower can prove costly. Equally as important as proper horsepower, is correct engineering of the application. Quite often, it is necessary that engine accessories be mounted in accordance with requirements of the equipment. It usually takes a right size and right design to supply the specific power needs for each type of machinery.

The engineering and sales policy of Hercules Motors Corporation is to design and sell internal combustion engines to fulfill the specific needs of each customer. For example, in equipment with limited engine installation area, "flat" or horizontal engines are often the answer. These engines can be placed under floors, or in any area which does not permit vertical installation. (Consult factory for models available.) Special Hercules vertical engines with accessories located on one side, permit installations near a firewall or bulkhead which is permanent and does not allow access to one side of the engine. These are but a few of the many problems which are often encountered in the proper application of an engine.

Our basic line of Hercules engines, 70 models from 3 to 500 H.P., is designed and engineered to meet the exact and varying demands of industry. We build engines for operation on gasoline, diesel fuel, natural gas, L. P. Gas, kerosene, or any other standard fuel that is readily available. That's why we have been known as "Engine Manufacturing Specialists Since 1915"

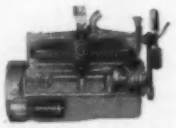
If you'd like to know more about our engines, write for the folder "Hercules Engines". It lists the sizes and power ratings of each model. If, however, you have a specific power problem give us the details. Our engineers will work with you to solve your problems and of course, there is no obligation.



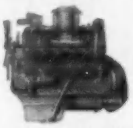
Hercules Model NXB
2 cylinder gasoline engine
15.6 H.P.



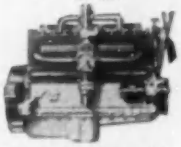
Hercules Model DOOD
4 cylinder diesel engine
79 H.P.



Hercules Model JXD
6 cylinder gasoline engine
112 H.P.



Hercules Model DIX6D
6 cylinder diesel engine
93 H.P.



Hercules Model HXE
6 cylinder gasoline engine
236 H.P.



Hercules Model DFXHF
6 cylinder diesel engine
260 H.P.



Hercules Model DNX-V8DTS
8 cylinder diesel engine
500 H.P.

Engine Specialists since 1915

HERCULES ENGINES

HERCULES MOTORS CORPORATION

103 Eleventh Street, S. E. • Canton, Ohio

News of the MACHINERY INDUSTRIES

(*Continued from page* 466)

about 10 manufacturers employing some 500 persons and produces an extensive range of lathes, grinding, gear cutting, drilling, milling and boring machines valued annually at about $4.4 million.

Over the last two or three years the industry suffered its first major reverse in demand since the last war, mainly due to the high annual level of imports valued on the average, in the last three years, at about $11 million. The average of the previous three years was approximately $5.5 million.

However, there has been evidence that, with a few exceptions, slight improvement has continued in the last six months. It has to be noted that only a few companies in the industry are currently engaged entirely on machine tools, the remainder producing other types of plant equipment or jobbing work.

Notwithstanding the difficulties recently experienced by the industry, it is now generally accepted that the Australian machine tool industry is firmly established. The overall improvement is attributed to the increased confidence and improved conditions in industry generally. The value of output, however, is still far below the peak figure of $6.6 million recorded in 1951-52. In 1952-53, the figure was $3.5 million.

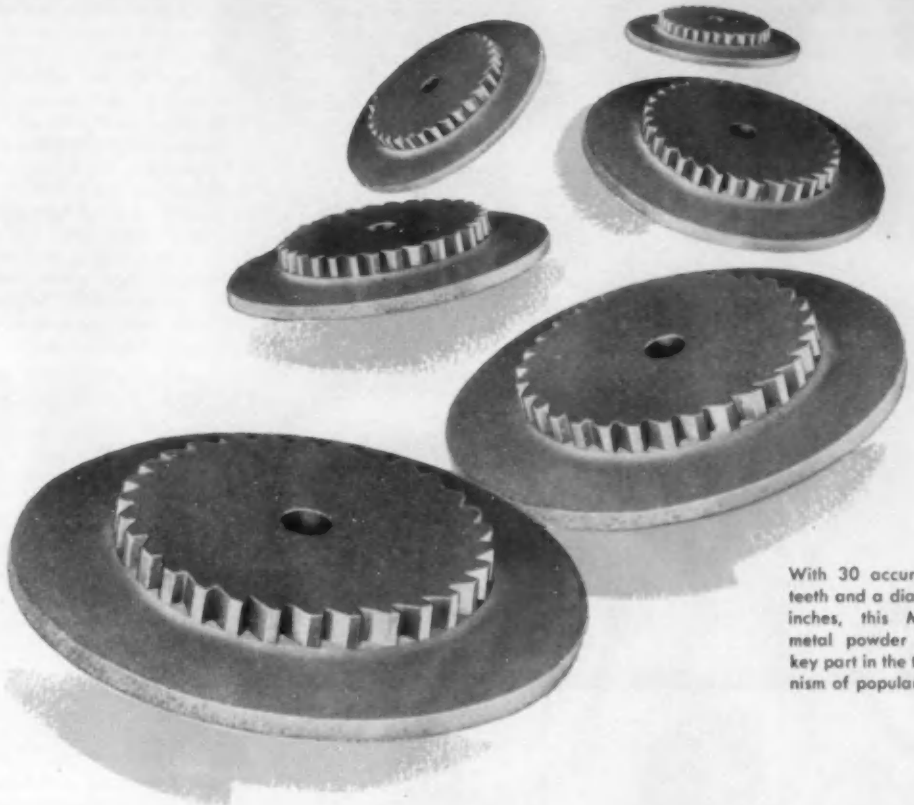
Approximately 60 per cent of the available overall capacity of machine tool builders is being utilized on machine tools. Shortage of skilled labor is the greatest factor restricting a higher production rate.

Production is being maintained by using imported steel at prices higher than the local equivalent. Although some serious delays in delivery occur, supplies of materials are generally available.

Most of the demand for machine tools arises from the engineering manufacturing industries, for new projects or replacements. The automotive, aircraft, domestic electric appliance and builders' hardware manufacturers are important users.

The value of orders received for machine tools has increased in the last six months, although this is far from general in the case of smaller manufacturers elsewhere. Where manufacturers have been associated with machine tool merchants, they do

moraine engineering



With 30 accurately formed teeth and a diameter of 1 ½ inches, this Moraine-made metal powder ratchet is a key part in the tuning mechanism of popular auto radios.

...finding saving ways

The ways to lower costs are many . . . and Moraine engineers *know* many. The Moraine engineering policy is to look ahead—to think ahead—so that when a customer presents a troublesome problem a solution is generally reached. In Moraine—with its teams of design engineers to develop ideas and teams of process engineers to produce them—manufacturers have a dependable supplier of uniform high quality, top performing, reasonably priced parts.

To illustrate: The metal powder part pictured above costs a Moraine customer several cents less than the assembly it replaced. If you use parts in quantity, Moraine may find saving ways for you.

Moraine products include: Moraine-400 bearings, toughest automotive engine bearings ever made—Moraine friction materials—Moraine metal powder parts—M-100 engine bearings and Moraine conventional engine bearings—self-lubricating bearings—Moraine porous metal parts—Moraine power brakes—Delco hydraulic brake fluids—Delco master cylinders, wheel cylinders, lined brake shoes and parts.

moraine products

DIVISION OF GENERAL MOTORS, DAYTON, OHIO

not appear to have suffered as seriously as others. In a number of cases, orders were received as a result of recent machine tool exhibitions held in Melbourne and Sydney. Orders have been placed by Commonwealth and State Government Departments for reconditioning and rebuilding of used machine tools and for the production of new ones.

Monthly sales in Victoria have increased by about 20 per cent over the last six months, with all manufacturers participating in the rise. In other States the pattern was not consistent. According to the industry, higher sales would follow an increase in initial depreciation rates on plant throughout industry.

Imports increased by nearly $4.4 million in 1951-52, while local production gained only about half this figure. However, in 1952-53 production fell by about 20 per cent with imports remaining about the same as in the previous year. Although production statistics for 1954 are not yet available, it is believed that a somewhat smaller rise has taken place—imports during that year being approximately $440,000 lower than for 1952-53.

Competition is still keen, particularly from imports which continue around $11 million per annum. Imports of broaching, gear cutting, grinding and milling machines were higher in 1953-54. About 70 per cent of the total imports in 1953-54 came from the U.K., and over 10 per cent from U. S. A., in both cases a higher percentage than in 1952-53.

Exports rose by $92,000 in 1953-54 (to $246,000), but keen competition from overseas may make it difficult to improve on these figures.

Although some items are being imported from Germany at lower prices, the quality and prices of current models of Australian machines are said to be generally competitive with comparable imported lines.

Training Conference

The Second Annual Material Handling Training Conference will be held June 19 through July 2 at Lake Placid, New York. Emphasis will be on solving actual problems which industrial companies meet in their day-to-day operations.

Die Casting

The American Die Casting Institute recently held an industrial exhibit of over 200 unusual die castings. The original exhibit staged in New York City was the first of a nationwide series sponsored by the Institute. The ADCI provided a team of qualified technical representatives to answer questions concerning die casting practice.

Name Change

We have recently received word that the Charles L. Jarvis Co., Middletown, Conn., has changed its name to Jarvis Corp. The company makes a complete line of taps, files, drills, and drilling and tapping heads.

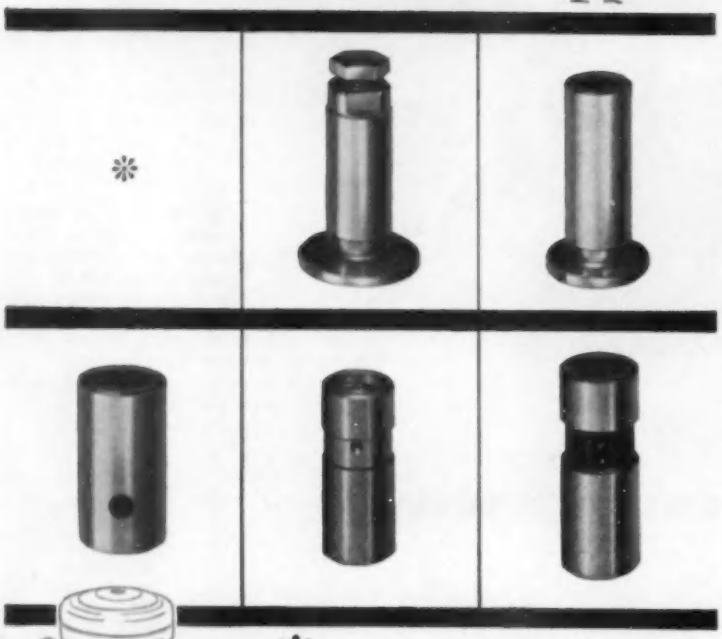
Fiftieth for Thompson

This year marks the golden anniversary of the Thompson Grinder Co., Springfield, Ohio. In conjunction with the anniversary announcement, it was disclosed that Thompson was working on new grinders which will have automatic controls, will operate to closer tolerances, and have a faster production rate.

Foundation Eliminated With Vibration Dampers

For some time the Korfund Co., Inc., Long Island City, has been conducting tests in the plant of the

JOHNSON *tappets*





keep pace with today's engines

Continual experimentation and excellent manufacturing methods show a steady product improvement that make JOHNSON TAPPETS worthy of your consideration. Only proven materials, covering a range of steel, chilled iron, and various iron alloys are used in the manufacture of JOHNSON TAPPETS, providing greater strength, light weight and increased wear resistance. Serving the AUTOMOTIVE — AIRCRAFT — FARM — INDUSTRIAL — MARINE Industries.

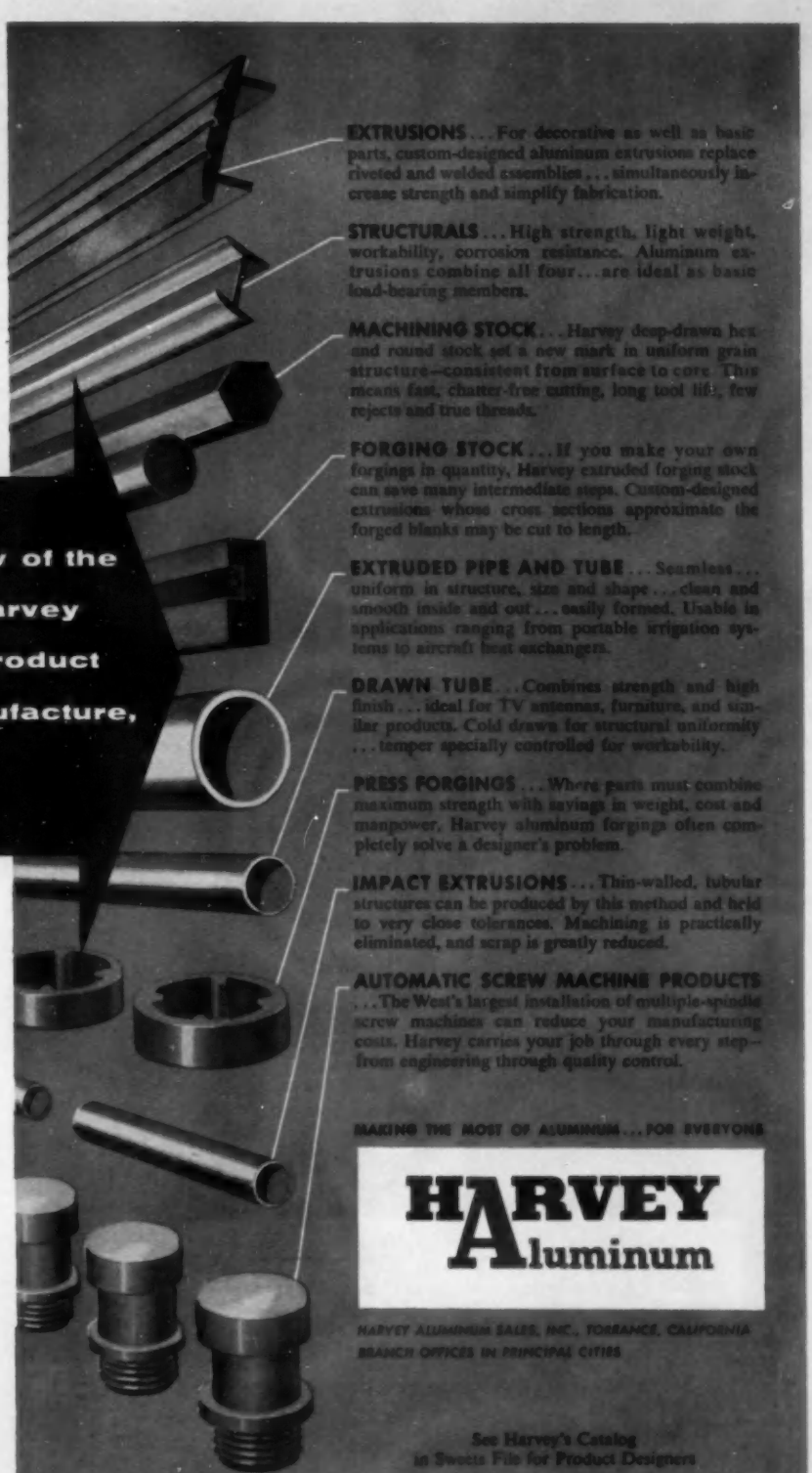
"tappets are our business"

JOHNSON JP PRODUCTS

MUSKEGON, inc. MICHIGAN

How Harvey puts aluminum to work for you...

Here are a few of the many ways Harvey makes your product easier to manufacture, easier to sell



EXTRUSIONS... For decorative as well as basic parts, custom-designed aluminum extrusions replace riveted and welded assemblies... simultaneously increase strength and simplify fabrication.

STRUCTURALS... High strength, light weight, workability, corrosion resistance. Aluminum extrusions combine all four... are ideal as basic load-bearing members.

MACHINING STOCK... Harvey deep-drawn hex and round stock set a new mark in uniform grain structure—consistent from surface to core. This means fast, chatter-free cutting, long tool life, few rejects and true threads.

FORGING STOCK... If you make your own forgings in quantity, Harvey extruded forging stock can save many intermediate steps. Custom-designed extrusions whose cross sections approximate the forged blanks may be cut to length.

EXTRUDED PIPE AND TUBE... Seamless... uniform in structure, size and shape... clean and smooth inside and out... easily formed. Usable in applications ranging from portable irrigation systems to aircraft heat exchangers.

DRAWN TUBE... Combines strength and high finish... ideal for TV antennas, furniture, and similar products. Cold drawn for structural uniformity ... temper specially controlled for workability.

PRESS FORGINGS... Where parts must combine maximum strength with savings in weight, cost and manpower, Harvey aluminum forgings often completely solve a designer's problem.

IMPACT EXTRUSIONS... Thin-walled, tubular structures can be produced by this method and held to very close tolerances. Machining is practically eliminated, and scrap is greatly reduced.

AUTOMATIC SCREW MACHINE PRODUCTS... The West's largest installation of multiple-spindle screw machines can reduce your manufacturing costs. Harvey carries your job through every step—from engineering through quality control.

Forty years of solving the special and difficult design problems of industry have developed the "practical imagination" that characterizes the entire Harvey approach. Our Field Engineers will gladly sit down with your own designers to determine in detail how Harvey's experience can put aluminum to work making *your* product easier to manufacture, easier to sell.

MAKING THE MOST OF ALUMINUM... FOR EVERYONE

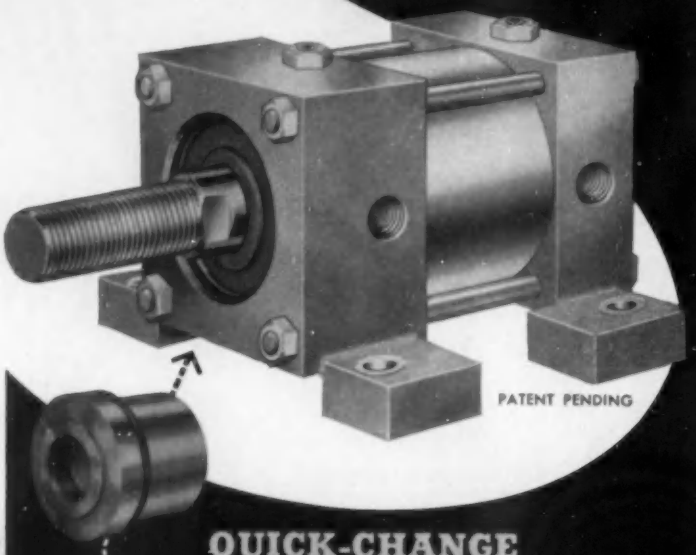
HARVEY Aluminum

HARVEY ALUMINUM SALES, INC., TORRANCE, CALIFORNIA
BRANCH OFFICES IN PRINCIPAL CITIES

See Harvey's Catalog
in Sweets File for Product Designers

RESEARCH... DEVELOPMENT... PRODUCTION... *Harvey does all three as a leading independent producer of aluminum extrusions in all alloys and all sizes, special extrusions, press forgings, hollow sections, structurals, rod and bar, forging stock, pipe, tubes, impact extrusions, aluminum screw machine products and related products. Also similar products in alloy steel and titanium on application.*

*APPROVED HEAVY-DUTY AIR CYLINDERS for Automation



QUICK-CHANGE PACKING CARTRIDGE Cuts Downtime

Step up production with rugged, service-free, S-P Heavy-Duty Air Cylinders:

- Designed for 200 PSI
- Rolled steel end plates
- Extra long cushions
- Extra large, hardened piston rod
- Minimum mounting and envelope dimensions
- 5 types of mountings
- 8 bore sizes, 1½" to 6"
- Double porting
- Interchangeable check and cushion valves
- Quick-change packing and bearing cartridge

* S-P Automation Cylinders were designed expressly for a large automobile manufacturer. They are thoroughly proven for automation and general heavy-duty applications. Prompt deliveries. Send for Catalog 109. For S-P standard Air Cylinders, request Catalog 102. The S-P Manufacturing Corp., 12415 Euclid Ave., Cleveland 6, Ohio.

THE S-P MFG. CORP. — Cleveland
A Bassett Company
PRECISION PRODUCTS SINCE 1916

AIR AND HYDRAULIC CYLINDERS • POWER CHUCKS • ROTATING AIR CYLINDERS
COLLET AND DRILL PRESS CHUCKS • AIR PISTONS, VALVES AND ACCESSORIES

Pneumatic Drop-Hammer Co., Braintree, Mass. A standard model 900 lb capacity hammer weighing 21,000 lb was mounted without bolting on four steel-spring Vibro-Isolators—one under each corner of the anvil. These isolators were not bolted either to the machine or to the floor and vibration tests were made with a pickup and an oscillograph. During operation of the hammer in a production type run, speed of production and quality of work were equal to that produced by a conventionally mounted hammer, according to Korfund engineers. With the hammer operating and the pickup set on the floor approximately 12 ft from the hammer, the oscillograph did not record any vibration in the floor.

BOOKS . . .

THE DOLLARS AND SENSE OF BUSINESS FILMS, *published by Association of National Advertisers, Inc., 285 Madison Ave., New York 17, N. Y. Price, $5.00.* This book is the outgrowth of a research project undertaken by the Films Steering Committee of the Association of National Advertisers in order to compile useful production and distribution cost data on public relations and advertising motion pictures. With around 500,000 16mm sound projectors now available in this country, the non-theatrical film has become an important tool for management in communicating with the public. Presented here is an analysis of the actual cost and circulation records of 157 important business films. The facts are presented in three separate sections. The first part is a quick-reading summary of the statistical results of the survey. In the second section, the committee has elaborated upon the findings of this survey by pointing out some of the more common reasons why a growing number of companies consistently employ motion pictures in their advertising and public relations program. The third section of the book is devoted to detailed tabulations of the results of the survey broken down into forty-two separate tables.

THE ECONOMIST IN THE TWENTIETH CENTURY, *by Lionel Robbins, published by St. Martin's Press, Inc., 103 Park Ave., New York 17, N. Y. Price, $3.50.* The greater part of this collection consists of a more or less inter-related series of lectures on outstanding problems of economic and financial policy. Full employment, the dollar shortage, the control of inflation, fixed versus fluctuating exchange rates, commercial policy, convertibility — these are some of the topics dealth with in discussions which may be said to share as their main preoccupation the twin problems of internal stability and external equilibrium. This central core of lectures deals with their subjects on a midway plane of generality —sufficiently near the post-war scene to take their cue from this setting, sufficiently detached to be developed in the form of broad observations rather than particular prescriptions. The lecture which gives its title to the book has a wider scope and embodies its author's most recent reflections on the position of the economist in the modern world and of economics in the hierarchy of social studies.



NESCO REPORTS ON BALDWIN'S 60-H HYDRAULIC TESTING MACHINE:

"Our Baldwin gives us remarkable accuracy and flexibility over a wide range"

"Accurate, versatile and flexible testing over a wide range was a must for our government ordnance order," reports Nesco, Inc., Granite City, Ill. "Testwork on this order for shell casings and powder containers—far from a simple operation—called for a Baldwin 60-H Universal Hydraulic Testing Machine. And certainly its performance has proved our selection was a good one.

"In not one single instance have we found an error in our Baldwin that has contributed to any erroneous tensile data. Error in this ordnance work must not exceed 1%. A recalibration of the machine after 8 months of operation showed a deviation of only ½ of 1% over the entire 60,000 lb. range . . . enabling us to double required tolerance!

"In view of such dependable performance we are looking forward to using our versatile Baldwin for other invaluable applications. The low-cost operation of the machine with its convenience and ease of handling makes it a natural for experimental testing. Testing of incoming metals for the purpose of eliminating wastage and downtime plus testing welds of all types are only two of the applications we now have in mind."

Nesco concludes, "Since being installed by Baldwin's engineers in ready-to-use form, this machine has given us complete trouble-free service."

You, too, will benefit by using this low priced, versatile testing machine . . . for many diverse applications. For complete information, write now to Dept. 2604, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.



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LESS TORQUE

In leather—NATIONAL MICRO-TORC TRADEMARK

Lowest torque • Highest lubricity • No measurable leakage
Runs cool, lasts longer • Sealing lip stores oil

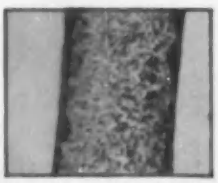


Fig. 1. National Micro-Torc Oil Seal. Oil cannot pass through elastomer coated side. Inner body retains natural porosity for "oil storage".

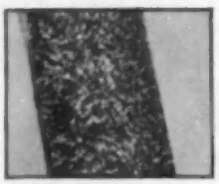


Fig. 2. Leather seal completely impregnated with rubber. Natural porosity of leather is destroyed by intense impregnation.

Shaft Size	Break Away Torque		Running Torque	
	Conventional Leather	Micro-Torc	Conventional Leather	Micro-Torc
1.500"	39 oz-in	7 oz-in	60 oz-in	56 oz-in
2.937"	126	39	253	164
3.812"	95	49	287	207

Fig. 3. Breakaway and running torque measurements, National Micro-Torc vs. conventional leather oil seals.

	NMB Micro-Torc		Completely Impregnated Leather Seal	
Test Conditions				
Shaft Speed:	2200 RPM		800 RPM	
Shaft Size:	3.875"		2.750"	
Shaft Runout, TIR:	.003"		.004"	
Oil Temperature:	200° F.		165° F.	
Test No.	C-1642	C-1643	D-100	D-101
Total Running Time:	1017 hrs.	1017 hrs.	108 hrs.	108 hrs.
Condition after Test:				
Sealing Member:	Flexible	Flexible	Very Stiff	Very Stiff
180° Bend Test:	Surface Cracks	Surface Cracks	Deep Cracks	Deep Cracks

Fig. 4. Service life test results. National Micro-Torc Oil Seals vs. completely impregnated leather seals.

Revolutionary new Micro-Torc Oil Seals, exclusively from National, employ a leather sealing member coated on the surface with a high lubricity elastomer. This coating not only reduces torque as much as 80% but effectively prevents lubricant leakage. Since the coating is applied to the outer surface of the sealing member only, the body of the sealing lip retains its natural porosity to store oil for periods of semi-starved operation. (Figure 1.)

The appreciable superiority of Micro-Torc over completely impregnated leather seals (Figure 2) is shown at left. In addition to a marked reduction in torque (Figure 3), service life of Micro-Torc seals was test-proven to be up to 10 times the life of completely impregnated seals, and 2 to 3 times that of wax or resin impregnated seals. (Figure 4.)

In dry-running life tests Micro-Torc seals operated for 100 hours at 1,350 rpm *with no lubrication*. No squealing or sloughing was experienced, and all Micro-Torc seals remained flexible and operative.

National Micro-Torc Oil Seals are unaffected by many industrial fluids and lubricants which attack ordinary leather seals. They are recommended for application where temperatures do not exceed 200° F, shaft speeds are not over 2,000 fpm and runout is not greater than .005 indicator reading.



New! NATIONAL TORQUE METERS

New National Torque Meters provide a simple, accurate way to measure breakaway torque of oil seals. The meters are rugged, compact, easily portable, ideal for production or laboratory use. They have an easy-acting self-centering chuck for accurate seal holding, and use a simple taper-fitting test shaft you can make up in a matter of minutes. The Meters are designed for utmost simplicity, and with them unskilled personnel can make accurate torque readings with but a few moments training.

Two sizes: Model 415 fits seals up to 6" dia.; 15 lbs. in. torque. Model 845 fits seals up to 8" dia.; 45 lbs. in. torque.

Meters measure 13" long x 10" wide x 11" high. Weight 27 lbs. Sturdy fiber carrying case can be furnished.

with NATIONAL OIL SEALS

*In synthetic rubber—*SYNTECH®

Low torque • Rubber-covered or ground O. D. • Long life
Zero leakage • Unaffected by most industrial fluids

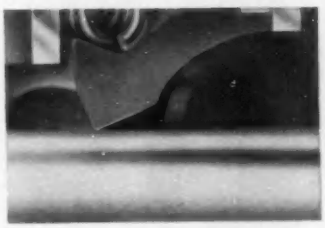


Fig. 5. Cross-section, typical National Syntech sealing lip. Note limited point of contact between seal and shaft.

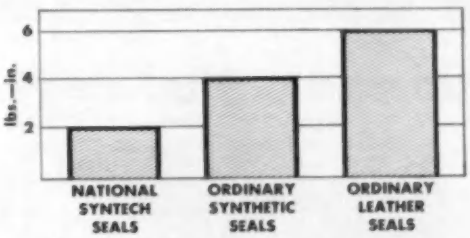


Fig. 6. Torque, Syntech vs. conventional synthetic rubber and leather oil seals. Seals tested on same shaft, under identical conditions.



Fig. 7. (Left) National Syntech Rubber-Covered O.D. (Right) National Syntech with machine-ground steel O.D.

NATIONAL
OIL & GREASE SEALS
O-RINGS SHIMS

Developed and introduced by National in 1946, National Syntech seals are among today's most widely used synthetic rubber oil seals. Their performance and dependability have been proven in thousands of commercial applications.

Syntech seals are particularly designed for higher speed, higher temperature applications where torque must be held to the absolute minimum. They feature an exclusive sealing lip design (Figure 5) which insures minimum contact between lip and shaft, yet provides zero leakage over a long service life. The marked difference in torque between Syntech and ordinary leather seals can be as much as 200%, as shown in Figure 6.

National Syntech Oil Seals are available in a wide selection of types and sizes, including seals with rubber covered or machine-ground peripheries (Figure 7) spring-tensioned or spring-less, or with twin or triple lips for special applications.

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NEWARK, N. J. . . *Suite 814, 1180 Raymond Blvd., MItchell 2-7586*
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DIRECTORY OF MANUFACTURERS

(*Continued from page 263*)

CITY AND INTERCITY BUSES

For details of their products see pages 154-155.

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FITZJOHN Coach Co., Muskegon, Mich.
FLXIBLE Co., Loudonville, Ohio.
FLXIBLE-TWIN COACH, see Fixible Co.
GMC Truck & Coach Div., General Motors Corp., Pontiac 11, Mich.
MACK Motor Truck Corp., New York 1, N. Y.
MARMON-HERRINGTON Co., Inc., Indianapolis 7, Ind.
SOUTHERN COACH Mfg. Co., Inc., Evergreen, Ala.
TRANSIT BUSES Inc., Subsidiary of Checker Cab Mfg. Corp., Detroit, Mich.

AMERICAN TRACTORS

For details of their products see pages 156-161.

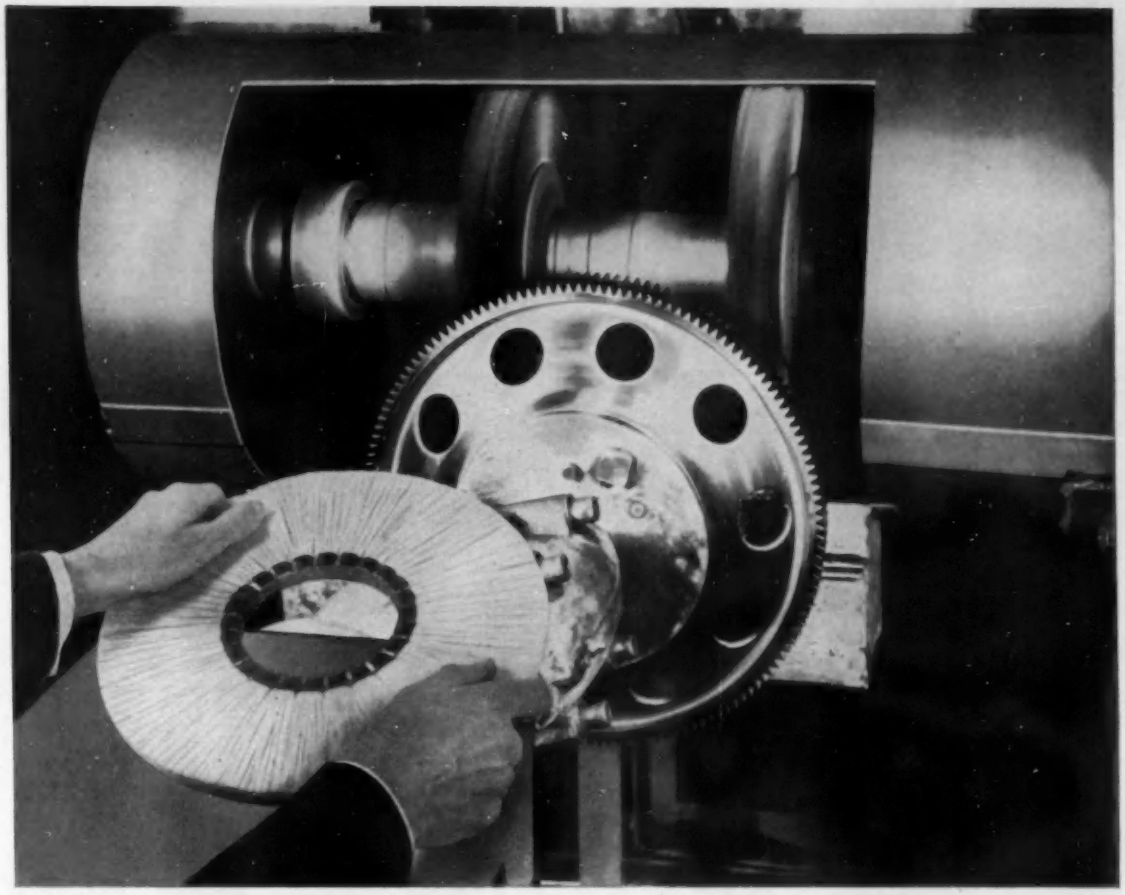
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J. I. CASE Co., Racine, Wis.
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EARTHMASTER Farm Equipment, Sun Valley, Cal.
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INTERNATIONAL HARVESTER Co., Chicago 1, Ill.
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MASSEY-HARRIS Div., Massey-Harris-Ferguson Inc., Racine, Wis.
Massey-Harris-Ferguson Inc., Detroit 22, Mich.
McCORMICK, see International Harvester Co.
MINNEAPOLIS-MOLINE Co., Minneapolis 1, Minn.
MINNEAPOLIS-MOLINE Co., Louisville 8, Ky.
The OLIVER Corp., Charles City, Iowa.
The OLIVER Corp., Cleveland 17, Ohio.
The OLIVER Corp., Plant #2, South Bend 21, Ind.
R. H. SHEPARD Co., Inc., Hanover, Pa.
TIGER Tractor Corp., Keyser, W. Va.

U. S. CIVIL AND MILITARY AIRCRAFT

For details of their products see pages 218-219, 222-223.

AERO Design and Engineering Co., Bethany, Okla.
ANDERSON GREENWOOD & Co., Houston, Tex.
BAUMANN Aircraft Corp., Pacoima, Cal.
BEE Aviation Associates, San Diego 9, Cal.
BEECH Aircraft Corp., Wichita 1, Kan.
BELLANCA Aircraft Corp., New Castle, Del.
BOEING Airplane Co., Seattle 14, Wash.
CALLAIR, Afton, Wyo.
CESSNA Aircraft Co., Wichita, Kan.
CHANCE VOUGHT Aircraft Div., United Aircraft Corp., Dallas, Tex.
COLONIAL Aircraft Corp., Huntingdon, L. I., N. Y.

(*Turn to page 480, please*)



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(Continued from page 478)

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FAIRCHILD Aircraft Div., Fairchild Engine & Airplane Corp., Hagerstown, Md.
FLETCHER Aviation Corp., Pasadena 1, Cal.
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RAWDON Bros. Aircraft Inc., Wichita, Kan.
REPUBLIC Aviation Corp., Farmingdale, L. I., N. Y.
STITS Aircraft, Riverside, Cal.
TAYLORCRAFT, Inc., Conway, Pa.
TEMCO Aircraft Corp., Dallas 2, Tex.

FOREIGN CIVIL AND MILITARY AIRCRAFT

For details of their products see pages 219-221, 223-224.

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de HAVILLAND Aircraft Proprietary Ltd., Bankstown, N.S.W., Australia.

BELGIUM

AVIONS FAIREY S.A., Gosselies, Belgium.
Societe Anonyme Belge De Constructions Aeronautiques, Haren-Bruxelles, Belgium.

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BLACKBURN & General Aircraft Ltd., Brough, East Yorks, Eng.
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The BRISTOL Aeroplane Co., Ltd., Filton House, Bristol, Eng.
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The de HAVILLAND Aircraft Co., Ltd., Hatfield, Hertfordshire, Eng.
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HANDLEY PAGE, Ltd., Cricklewood, London, N.W.2, Eng.
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SAUNDERS-ROE, Ltd., Osborne, East Cowes, Isle of Wight, Eng.
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VICKERS-ARMSTRONG, Ltd., Weybridge, Surrey, Eng.
WESTLAND Aircraft Ltd., Yeovil, Eng.

CANADA

The de HAVILLAND Aircraft of Canada, Ltd., Toronto, Canada.

DENMARK

SKANDINAVISK AERO Industri A.S., Copenhagen Airport, Kastrup, Denmark.

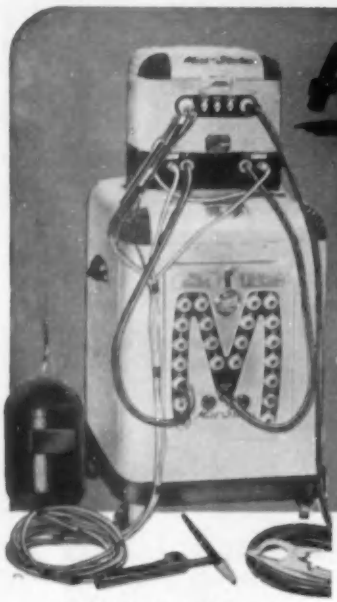
FINLAND

Veljekset KARHUmaki Oy, Halli, Finland.
VALMET OY Aircraft Factory, Tampere, Finland.

FRANCE

Avions Paul AUBERT, Paris 17e, France.
Societe BOISAVIA, Seine, France.
S. A. des Ateliers Louis BREQUET, Paris 16, France.
Avions Maurice BROCHET, Neauphle-Le-Chateau, France.
Constructions Aeronautiques Du Bearn, Pau-Idren, Basses-Pyrenees, France.
Avions Marcel DASSAULT, Paris 16, France.
Societe Des Usines FARMAN, Paris 16e, France.
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Avions Max HOLSTE, Paris 8, France.
Avions HUREL-DUBOIS, Meudon-Villacoublay, France.
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(Turn to page 432, please)



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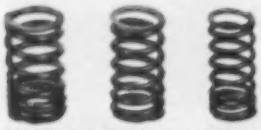
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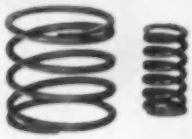


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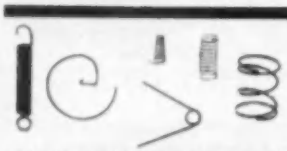
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Societe Nationale de Constructions Aeronautiques du Sud-Est (S.N.C.A.S.E.), Paris 8, France.
Societe Nationale de Constructions Aeronautiques du Sud-Ouest (S.N.C.A.S.O.), Paris 16, France.

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AERonautica MACCHI S.P.A., Varese, Italy.
Societa Aeronautica Italiana Ing. A. AMBROSINI & Co., Milano, Italy.
FIAT Societa per Azioni, Torino, Italy.
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Construcciones AERONAUTICAS, S.A., Madrid, Spain.
La HISPANO-Aviacion S.A., Madrid, Spain.

SWEDEN

Svenska Aeroplan AB (SAAB) Aircraft Co., Linkoping, Sweden.

U. S. ROTARY WING AIRCRAFT

For details of their products see page 225.

BELL Aircraft Corp., Fort Worth 1, Tex.
CESSNA Aircraft Co., Wichita, Kan.
DOMAN Helicopters, Inc., Danbury, Conn.
GYRODYNE Co. of America, Inc., St. James, L. I., N. Y.
HILLER Helicopters, Palo Alto, Calif.
KAMAN Aircraft Corp., Windsor Locks, Conn.
McDONNELL Aircraft Corp., St. Louis 3, Mo.
PIASECKI Helicopter Corp., Morton, Pa.
ROTOR-CRAFT Corp., Glendale, Cal.
SIKORSKY Aircraft Div., United Aircraft Corp., Bridgeport 1, Conn.

U. S. AIRCRAFT ENGINES

RECIPROCATING TYPE

For details of their products see pages 226-227.

Aircooled Motors, Inc. (Franklin), Syracuse 8, N. Y.
CONTINENTAL Motors Corp., Aircraft Engine Div., Muskegon, Mich.
FRANKLIN, see Aircooled Motors, Inc.
JACOBS Aircraft Engine Co., Pottstown, Pa.
LYCOMING Div., Avco Manufacturing Corp., Williamsport, Pa.
PRATT & WHITNEY Aircraft, Div. United Aircraft Corp., East Hartford 8, Conn.
Curtiss-WRIGHT Corp., Wood-Ridge, N. J.

AIRCRAFT GAS TURBINES

For details of their products see pages 228-231.

UNITED STATES

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BOEING Airplane Co., Seattle 14, Wash.
CONTINENTAL Aviation & Engineering Corp., Detroit 15, Mich.
FAIRCHILD Engine Div., Fairchild Engine & Airplane Corp., Farmingdale, L. I., N. Y.

GENERAL ELECTRIC Co., Cincinnati 15, Ohio.
PRATT & WHITNEY Aircraft, Div. of United Aircraft Corp., East Hartford 8, Conn.
WESTINGHOUSE Electric Corp., Aviation Gas Turbine Div., Kansas City, Mo.
WRIGHT Aeronautical Div., Curtiss-Wright Corp., Wood-Ridge, N. J.

BRITISH

ARMSTRONG SIDDELEY Motors Ltd., Coventry, Eng.
BLACKBURN & General Aircraft, Ltd., London, W.1, Eng.
BRISTOL Aeroplane Co., Ltd., Filton House, Bristol, Eng.
de HAVILAND Engine Co., Ltd., Leavesden, Herts., Eng.
D. NAPIER & Son, Ltd., Acton, London W.3, Eng.
ROLLS-ROYCE, Ltd., Derby, Eng.

AUTOMOTIVE GASOLINE ENGINES

For details of their products see pages 240-251.

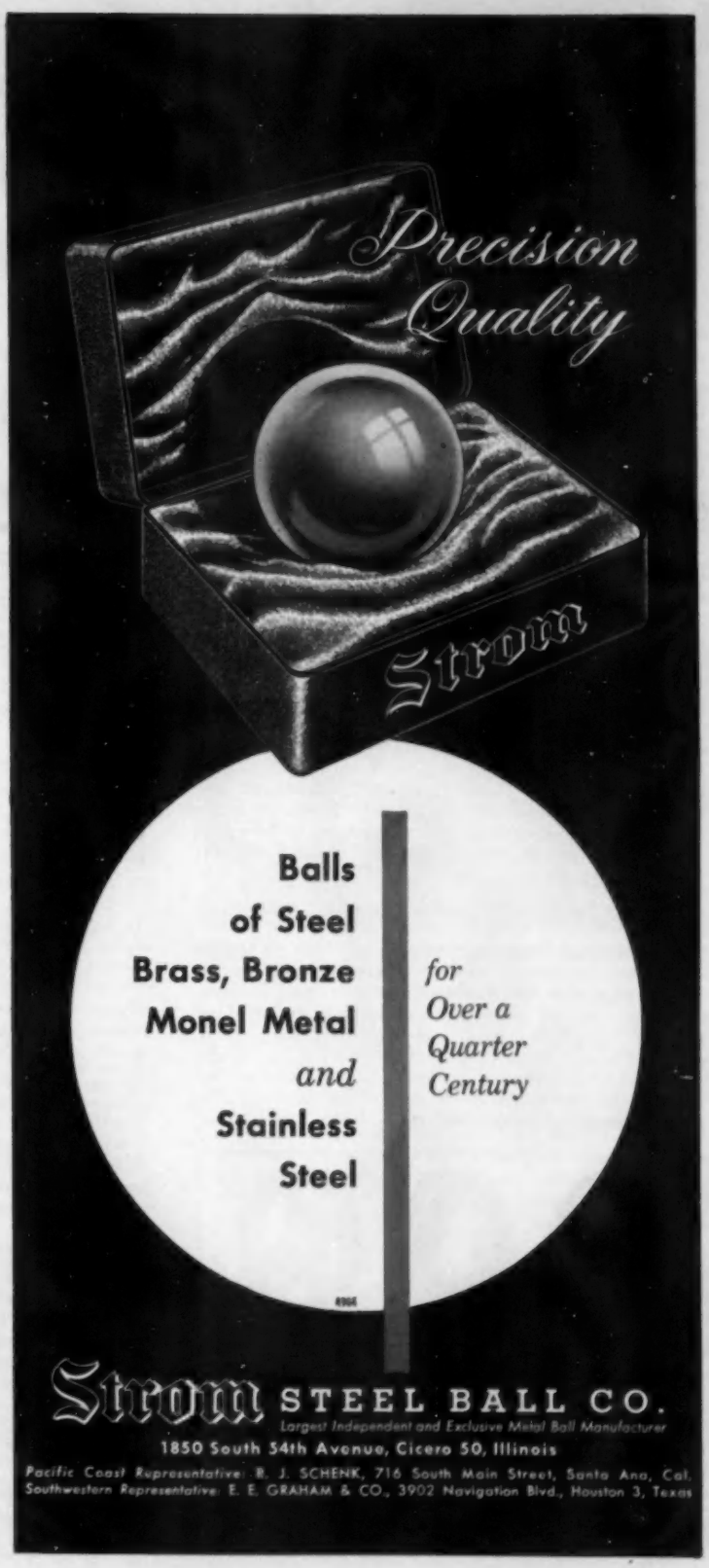
AEROJET-General Corp., Cincinnati 14, Ohio.
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BRENNAN Motor Mfg. Co., Syracuse 2, N. Y.
The BUDA Co., Harvey, Ill.
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CONTINENTAL Motors Corp., Muskegon, Mich.
DEARBORN Marine-Engines Inc., Detroit 38, Mich.
DODGE Division, Chrysler Corp., Detroit 31, Mich.
FAGEOL Products Co., Kent, Ohio.
FORD Motor Co., Dearborn, Mich.
FORD Motor Co., Industrial Engine Dept., Highland Park 3, Mich.
GMC Truck & Coach Div., General Motors Corp., Pontiac 11, Mich.
GRAY MARINE Motor Co., Detroit 7, Mich.
HALL-SCOTT Motor Div., ACF-Brill Motors Co., Berkeley 10, Calif.
HERCULES Motors Corp., Canton 2, Ohio.
INTERNATIONAL Harvester Co., Industrial Power Div., Melrose Park, Ill.
KERMATH Mfg. Co., Detroit 8, Mich.
The LATHROP Engine Co., Mystic, Conn.
LE ROI Div., Westinghouse Air Brake Co., Milwaukee 14, Wis.
MACK Mfg. Corp., Plainfield, N. J.
MINNEAPOLIS-MOLINE Co., Minneapolis 1, Minn.
NORDBERG Mfg. Co., Milwaukee 7, Wis.
The OLIVER Corp., Charles City, Iowa.
The OLIVER Corp., Plant #2, South Bend 21, Ind.
The PALMER Engine Co., Cos Cob, Conn.
RED WING Motor Mfg. Co., Red Wing, Minn.
REO Motors, Inc., Lansing 20, Mich.
SCRIPP'S Motor Co., Detroit 8, Mich.
STERLING Engine Co., Buffalo 12, N. Y.
STUDEBAKER-Packard Corp., South Bend 21, Ind.
UNIVERSAL Motor Co., Oshkosh, Wis.
WAUKESHA Motor Co., Waukesha, Wis.
WILLYS Motors, Inc., Toledo 1, Ohio.
WISCONSIN Motor Corp., Milwaukee 46, Wis.

DIESEL ENGINES FOR DIESEL-ELECTRIC LOCOMOTIVES

For details of their products see page 251.

American Locomotive Co. (Alco), Schenectady 5, N. Y.
BALDWIN-Lima-Hamilton Corp., Eddystone Div., Philadelphia 42, Pa.

(Turn to page 486, please)



engineering design

laminated rim CELORON®

by John A. Petho, Development Engineer
Continental-Diamond Fibre Company

The basic requirements for automotive timing gears are smooth transmission of power, quietness and reasonable service life. Depending on the installation these requirements will have varying degrees of importance which can be controlled to a large extent by the selection of the material, design, and quality of workmanship.

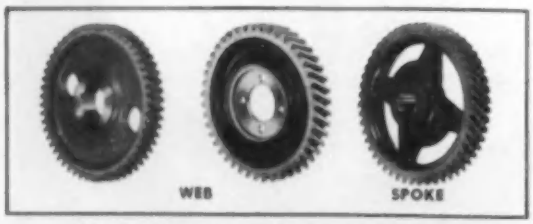
Material and design are closely related, but only too frequently changes in the powerplant have been made without corresponding changes in design and material. For this reason, a brief review is given of the design advantages of Celoron, a cotton fabric-based gear material, and of Celoron laminated rim timing gears.

WHAT IS CELORON?

It is the trademarked name of over 30 years standing for a laminated or molded industrial plastic made only by C-D-F for a wide range of gear and mechanical and electrical insulation needs. It designates one of the best, if not the best, high impact molded fabric phenolics for mechanical applications. For timing gears, a phenolic type resin bonds the laminated and macerated cotton fabric into a blank that has the required mechanical strengths. Over the years, we have learned the importance of selecting cotton fabric with the proper weave and weight. Consequently, the design engineer has been given a gear with greater strength, less tooth wear, more uniform tooth wear, quieter operation.

TYPES OF GEARS MADE FROM CELORON

For original equipment, the laminated rim construction has become standard with two types of construction between the rim and the hub. The gears can be light, medium or heavy duty types. The weight of the fabric used for the gear rim is controlled by the DP of the gear. The WEB gear is made as pictured below, offering a quality gear with the least possible finishing. The SPOKE gear incorporates many fundamental principles of design long used for greater stability and more life. The spokes absorb more critical vibrations, have greater resilience and flexibility. However, costs are slightly higher.



COMPARATIVE AVERAGE PROPERTIES

	Laminated (rim)	Macerated (web or spoke)
Tensile Strength, psi	10,000	6,500
Flexural Strength, psi	20,000	10,000
Compressive Strength, psi	38,000	25,000
Shearing Strength, psi	12,000	8,500
Izod Impact Strength, flatwise (Notched in ft. lbs. per 1" of notch)	4.0	2.3



HOW A CELORON GEAR IS MADE— Watch how the gear gets its tooth strength, flexibility, impact resistance. A special grade of tough cotton is coated with phenolic varnish, then cut into strips and punched into segments. These segments are staggered and piled up into the outer rim which will become the gear teeth. The web or inner ring is made of macerated cloth, gives the gear side flex. A metal bushing for mounting purposes is inserted and the make-up is put in an individual mold. The resin softens and flows, the coated fabric flows and fills the mold. On hardening, a strong Celoron molded gear blank is produced. Gears are stabilized so that hot engine oil will not significantly change their dimensions. Teeth are later hobbed in the laminated fabric rim. Tests show the laminated rim construction has higher impact strength, better resistance to stripping of the teeth and better wear resistance.

UNIFORM TOOTH STRENGTH

The segments forming the gear rim are punched in such a way that the stronger direction of the fabric is used to form the flank of the gear tooth. This insures uniformity of fabric construction in the gear teeth and results in Celoron's uniform tooth strength.

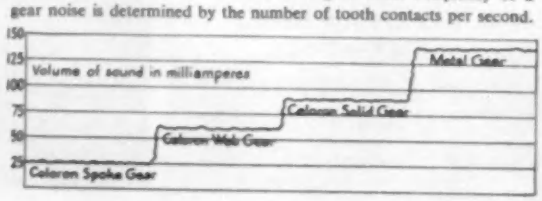
WEB FLEXIBILITY

To mold a non-uniform cross section web, laminated construction cannot be used. The treated canvas is macerated to permit shape molding. An important factor of web strength is the size of the particles used. Too large or too small particles will reduce the strength and influence the moldability of the gear. It is necessary to control the weight of each cake of macerated material, assuring a better quality gear.

The molding of the gear web permits the designer to introduce various degrees of flexibility to the gear. In some helical gear installations the service life of the gear can be directly related to flexibility. This is a problem which can be best solved by experience, knowledge of the material and complete knowledge of requirements of the installation. Unfortunately, all these factors are very seldom at the command of the gear designer.

SOUND HARMONICS OF CELORON

There is no mechanical motion without friction. Friction develops vibrations which are in turn transmitted to the air, thereby producing noise. As all sound is characterized by waves of definite frequency and amplitude, these characteristics of frequency and amplitude enter into a consideration of gear noise. Frequency of a gear noise is determined by the number of tooth contacts per second.



advantages of
TIMING GEARS

Amplitude of a gear noise is the result of a number of factors, such as the material and shape of the gear and gear housing.

Celoron has a natural low tone frequency and design changes in the structure of the web further reduces the tendency of noise pickup. With a spoke design, it is possible to break up the continuous line of sound between the hub and rim, practically eliminating the pick-up and amplification of sound.

HORSEPOWER RATING OF CELORON

Because Celoron is a non-metallic material, when calculating the horsepower rating of Celoron timing gears, use this modification in the velocity factor of the Lewis Formula.

$$\text{Velocity factor} = \frac{150}{200+v} + 0.25 \quad \text{or}$$

$$\text{safe working stress} = 6000 \left(\frac{150}{200+v} + 0.25\right)$$

$$HP = \frac{0.000095XSWSXFWXYXPLV}{DP}$$

This formula, adopted by the American Gear Manufacturers Association, takes into consideration the characteristics of Celoron. Results obtained in service have supported its use.

POSITIVE KEYING

Celoron which basically belongs to the plastic family has one of the disadvantages of plastics which is a limited amount of compressibility or plastic flow when subjected to a continuous load such as exists at the keyways. To overcome this characteristic and to distribute the loads at the keyway, a steel bushing is molded in the Celoron gears for the bore and the keyway. The steel bushing is anchored to the Celoron, in the molding operation, with staggered interrupted splines instead of the customary diamond knurls. This method is a C-D-F development.

GEARS VERSUS CHAINS

It would be presumptuous of me to set down all the pros and cons of this engineering tug-of-war. C-D-F naturally believes in gear timing and has worked to apply Celoron to its fullest use. Here are a few random quotes, not from plastics engineers, but from automotive design engineers:

"Our experience indicates that timing gears are extremely satisfactory. Probably one of the problems in satisfactory timing gear life is associated with crankshaft stiffness and the fact that the V-8 engine has a relatively short rigid shaft makes a timing gear ideal for this type of engine.

"We have had no recent experience in timing chains, but we abandoned them primarily because of slapping noise and wear. Since there are hundreds of wearing parts involved in a timing chain, it only takes a very minute amount of wear in each piece to provide an appreciable increase in slackness of the chain. Conversely, excessive back lash in timing gears also under some conditions produces knocks, but it is our opinion, based on actual experience, that the knock, or rattle, produced by excessive back lash in gears is much less offensive than the noise produced by slapping of worn timing chains.

"In conclusion, we see no limitations on the use of timing gears in modern high compression, high performance engines."

ANOTHER INTERESTING ONE: "From a cost standpoint the gear drive is less expensive than the timing chain drive."

AND ANOTHER: "Even the shortest camshaft drive chains consist of approximately 450 parts. Each of these parts is subject to wear. It is evident that even the slightest trace of wear on each individual part will add up to quite an imposing total for the entire chain.

"Then, too, wear may be considered from another viewpoint. Timing chains usually contain eight or ten tooth-like links across the width of the chain. These links are stamped from fairly thin metal. Therefore, the entire load being transmitted from the sprocket to the chain, or vice versa, is concentrated on a tooth area no greater than that afforded by the number of links and their thickness. While this design appears to be sufficient theoretically, actually wear takes place on the soft iron camshaft sprocket due to the whipping action of the chain between the sprockets. It is this whipping action that stretches the chain.

"A gear drive for a camshaft is simple. There are only two parts to wear as contrasted to the 450 in a competitor's timing chain. Even then the wear is distributed over the entire tooth width instead of being localized."



Celoron gears are individually molded and have been inspected thoroughly before leaving the C-D-F Bridgeport, Pa. factory.

SUMMARY

The foregoing are a few of the points which make Celoron a desirable material for automotive timing gear applications. There are many more from a cost and customer service standpoint. The material is being continually improved and in its 30 years of existence the only thing remaining of the original material is the name of Celoron. New resins, new fabrics, new methods of molding have made Celoron stronger and lower priced. Semi-automatic molding operations provide open capacity for supplying Celoron. Plant capacity has been steadily increased each year since 1946.

However, all the good inherent properties of Celoron can be destroyed by faulty design. It is always a good policy to discuss the design problems with the manufacturer of the material. C-D-F wants to help you, is a big reliable source of supply.

Address any questions, comments, requests for test data and samples to John A. Petho, Celoron Division, Continental-Diamond Fibre Company, Bridgeport, Pa.

Continental-Diamond Fibre

CONTINENTAL-DIAMOND FIBRE COMPANY
NEWARK 2, DELAWARE

DIRECTORY OF MANUFACTURERS

(Continued from page 483)

The COOPER-BESSEMER Corp., Mt. Vernon, Ohio.
ELECTRO-MOTIVE Div., General Motors Corp., La Grange, Ill.
FAIRBANKS, MORSE & Co., Chicago 5, Ill.

AUTOMOTIVE DIESEL ENGINES

For details of their products see pages 252-259.
ATLAS, see National Supply Co.
The BUDA Company, Harvey, Ill.
CATERPILLAR Tractor Co., Peoria, Ill.
CONTINENTAL Motors Corp., Muskegon 82, Mich.
CUMMINS Engine Co., Inc., Columbus, Ind.
Diesel Energy Corp. (Deutz), New York, N. Y.
Detroit Diesel Engine Div., General Motors Corp., Detroit 28, Mich.
DEUTZ, see Diesel Energy Corp.
FAGEOL-LEYLAND, see Twin Coach Co.
FAIRBANKS-MORSE & Co., Chicago 5, Ill.
GENERAL MOTORS, see Detroit Diesel Eng. Div.
GRAY MARINE Motor Co., Detroit 7, Mich.
HALLETT Mfg. Co., Inglewood, Calif.
Harnischfeger Corp., Diesel Engine Div. (P&H), Crystal Lake, Ill.
HERCULES Motors Corp., Canton 2, Ohio.
HILL Diesel Engine Div., Berry-Hill Corp., Providence 5, R. I.
INTERNATIONAL Harvester Co., Chicago 1, Ill.
KERMATH Mfg. Co., Detroit 8, Mich.
MACK Mfg. Corp., New York 1, N. Y.
MINNEAPOLIS-MOLINE Co., Minneapolis 1, Minn.
MURPHY Diesel Co., Milwaukee 14, Wis.
The National Supply Co., Engine Div., Springfield 99, Ohio.
The OLIVER Corp., Charles City, Iowa.
The OLIVER Corp., Plant No. 2, South Bend 21, Ind.
D. W. ONAN and Sons, Inc., Minneapolis, Minn.
P&H, see Harnischfeger Corp.
PACKARD, see Studebaker-Packard Corp.
The PALMER Engine Co., Cos Cob, Conn.
RED WING Motor & Mfg. Co., Red Wing, Minn.
SCRIPPS Motor Co., Detroit 8, Mich.
Studebaker-Packard Corp., South Bend, Ind.
R. H. SHEPPARD Co., Inc., Hanover, Pa.
STERLING Engine Co., Buffalo 13, N. Y.
SUPERIOR, see National Supply Co.
TWIN COACH Co. (Fageol-Leyland), Kent, Ohio.
WAUKESHA Motor Co., Waukesha, Wis.

U. S. SMALL GASOLINE ENGINES

For details of their products see pages 260-261.
BRIGGS & STRATTON Corp., Milwaukee 1, Wis.
CLINTON Machine Co., Maquoketa, Iowa.
CONTINENTAL Motors Corp., Detroit 14, Mich.
CUSHMAN Motor Works, Lincoln 1, Neb.
GLADDEN Products Corp., Glendale 4, Calif.
HOMELITE Corp., Port Chester, N. Y.
JACOBSEN Mfg. Co., Racine, Wis.
KERMATH Mfg. Co., Detroit 8, Mich.
KOHLER Co., Kohler, Wis.
The LAUSON Co., Div., Hart-Carter Co., New Holstein, Wis.
McCULLOCH Motors Corp., Los Angeles 45, Calif.
D. W. ONAN & Sons, Inc., Minneapolis 14, Minn.
POWER PRODUCTS Corp., Grafton, Wis.
REO Div., Motor Wheel Corp., Lansing 3, Mich.
UNITED Engine Co., Lansing, Mich.
UNIVERSAL Motor Co., Oshkosh, Wis.
WEST BEND Aluminum Co., West Bend, Wis.
WISCONSIN Motor Corp., Milwaukee 46, Wis.

U. S. OUTBOARD MOTORS

For details of their products see page 262.
CHAMPION Motors Co., Minneapolis 13, Minn.
CORSAIR Outboard Motor Co., Minneapolis 13, Minn.
ELGIN, see Sears, Roebuck & Co. & West Bend Aluminum Co.
EVINRUDE Motors, Milwaukee 16, Wis.
FIRESTONE Tire & Rubber Co., Akron 17, Ohio.
FLAMBEAU, see Metal Products Corp.
JOHNSON Motors, Waukegan, Ill.
Kiekhaefer Corp., Fond du Lac, Wis.
The LAUSON Co., Div. Hart-Carter Co., New Holstein, Wis.
MAJESTIC, see Champion Motors Co.
MERCURY, see Kiekhaefer Corp.
METAL PRODUCTS Corp. (Flambeau), Milwaukee 12, Wis.
OLIVER Outboard Motors, Div., Oliver Corp., Battle Creek, Mich.
SCOTT-ATWATER Mfg. Co., Inc., Minneapolis 13, Minn.
SEARS, ROEBUCK & Co. (Elgin), Chicago, Ill.

(Turn to page 488, please)



Automatic Balancing

...a Reality with TINIUS OLSEN ElecTdyne Balancing Machines

To meet a pressing need in the automotive industry, Olsen developed a machine for removing unbalance from crankshafts automatically. Unbalance readings are "memorized" by the machine and material is removed automatically with high speed drills. As many as 24 or more crankshafts per hour are being balanced and corrected within 0.3 ounce-inches on a production line basis, with no operator judgment involved.

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STATION No. 1
LOAD and UNLOAD

STATION No. 2
VERTICAL UNIT
No. F Drill thru 2 holes .257
Drill thru 1 hole 13/32
Drill thru 5 holes 13/32
Drill thru 2 holes 25/64
Drill thru 2 holes "U" (.368)
HORIZONTAL UNIT
F Drill thru 8 holes
Mill Pad

STATION No. 3
VERTICAL UNIT
Comb. 15/16 drill & 1/16 x 45°.
Chamfer 2 holes. Rough bore center bore 1 hole. Rough bore starter bore 1 hole.

STATION No. 4
VERTICAL UNIT
2 holes .438/.499 dia. ream
1 hole semi finish center bore
1 hole comb semi finish and finish starter bore
HORIZONTAL UNIT
8 holes ½ dia. & 90° chamfer

STATION No. 5
VERTICAL UNIT
2 holes ⅝ dia. x 90° chamfer
3 holes ½ dia. x 90° chamfer
2 holes spotface 1⅝ dia.
HORIZONTAL ANGLE UNIT
2 holes 15/32 drill
1 hole F (.257) drill

STATION No. 6
VERTICAL UNIT
3 holes 7/16—14 tap
2 holes 5/16—18 tap
HORIZONTAL UNIT
8 holes 5/16—18 tap

Baker Special Drilling Machines, composed of standard Baker units arranged to suit each individual problem, are designed for *productivity*. Units arranged in vertical, horizontal and angular planes perform multiple operations *faster . . .better . . . automatically* . . . with greater accuracy and efficiency. Consult Baker engineers for a better solution to your drilling problems.

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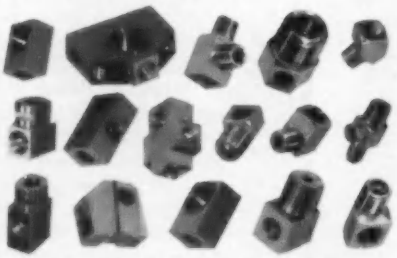
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DIRECTORY OF MANUFACTURERS

(Continued from page 486)

VOYAGER, see Champion Motors Co.
WEST BEND Aluminum Co. (Elgin), West Bend, Wis.

INDUSTRIAL TRUCKS

For details of their products, see pages 302-311.

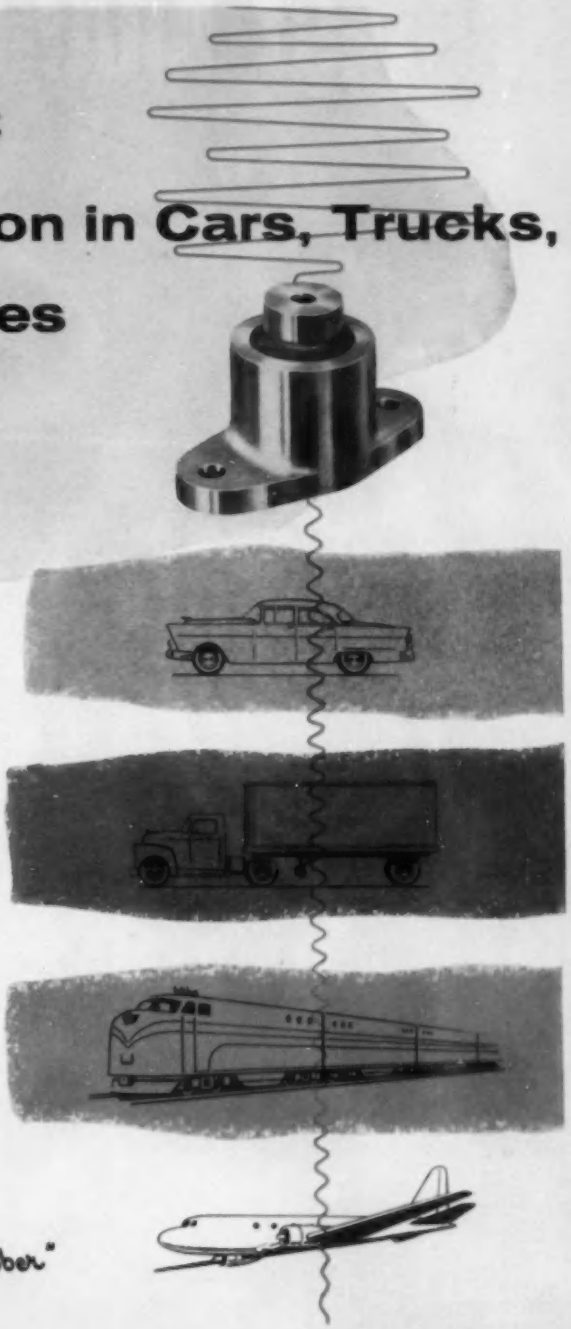
The ATLAS Car & Mfg. Co., Cleveland 10, Ohio.
AUTOMATIC Transportation Co., Div. Yale & Towne Mfg. Co., Chicago 20, Ill.
The BAKER-Raulang Co., Cleveland 2, Ohio.
BARRETT-Cravens Co., Northbrook, Ill.
BUDA Co., Harvey, Ill.
CHAMP Corp., El Monte, Calif.
CLARK Equipment Co., Battle Creek, Mich.
The COLSON Corp., Elyria, Ohio.
CRESCENT, See Barrett-Cravens Co.
The ELWELL - PARKER Electric Co., Cleveland 3, Ohio.
ERICKSON Power Lift Trucks, Inc., Minneapolis, Minn.
GERLINGER Carrier Co., Dallas, Ore.
H H Manufacturers, Long Beach 2, Calif.
The Frank G. Hough Co., Libertyville, Ill.
HYSTER Co., Portland 8, Ore.
KALAMAZOO Mfg. Co., Kalamazoo, Mich.
KWIK-MIX Co., Port Washington, Wis.
LEWIS-SHEPARD, Watertown, Mass.
LIFT TRUCKS, Inc., Cincinnati 14, Ohio
MAC DONALD, See Peterbilt Motors Co.
MARKET FORGE Co., Everett 49, Mass.
The MERCURY Mfg. Co., Chicago 9, Ill.
PAYLOADER, See Frank G. Hough Co.
Peterbilt Motors Co., Oakland 5, Cal.
The RAYMOND Corp., Greene, N. Y.
REVOLVATOR Co., No. Bergen, N. J.
ROSS, See Clark Equipment Co.
SILENT HOIST & Crane Co., Brooklyn 20, N. Y.
TOWMOTOR Corp., Cleveland 10, Ohio.
TRANSITIER Truck Co., Portland 10, Oregon.
WHITEMAN Mfg. Co., Los Angeles, Calif.
The YALE & TOWNE Mfg. Co., Philadelphia 15, Pa.

BOOKS...

MAGNETIC CONTROL OF INDUSTRIAL MOTORS, *by Gerhart W. Heumann, published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Price, $9.50.* Since the first edition of this book appeared, many changes have taken place in the design of control components and systems. These are reflected in the new second edition, which has been brought completely up to date in line with recent advances in the electrical art. Expanded by about 20 per cent, it includes much new material on adjustable voltage and regulating systems, particularly with regard to rotating and magnetic amplifiers; obsolete controller designs have been entirely eliminated. Since the performance of control equipment is based on the desired motor performance, care has been taken to discuss the external performance characteristics of all types of industrial motors in the introductory chapters of the book. This is followed by a discussion of components and devices available to the designer. Basic circuits are introduced which obtain the necessary motor performance for industrial drives. The practical combinations of these building blocks are illustrated by an examination of widely used general purpose and special purpose controllers.

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For a complete selection and design guide to Silentbloc motion control products write for Catalog 4240. The General Tire & Rubber Company, Industrial Products Division, Dept. D, Wabash, Indiana.

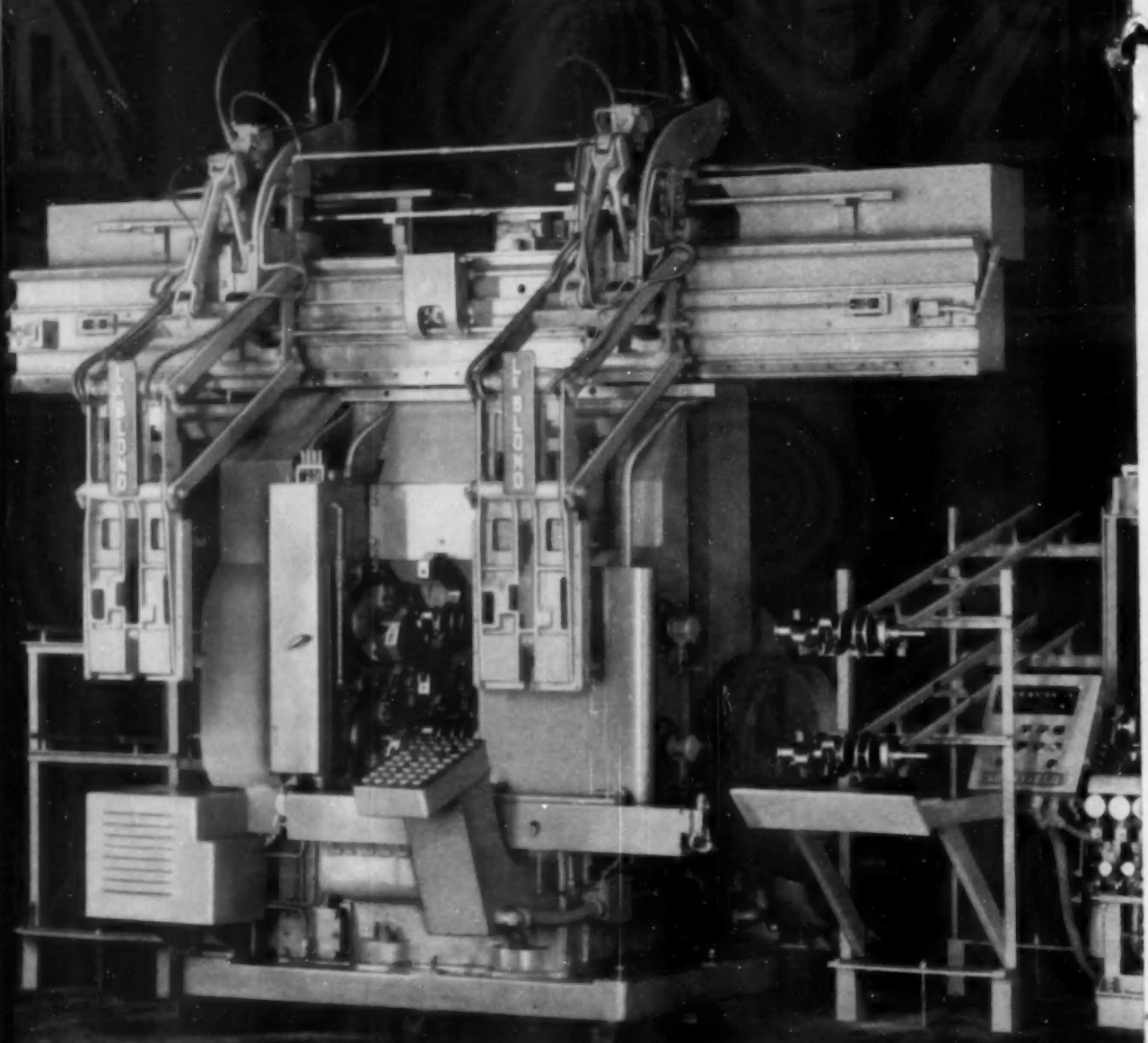
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FASTEST CRANKSHAFT LATHES



Crankshafts travel from right to left. The LeBlond LBA turns main bearings, flange and pilot, sprocket diameter and front end simultaneously. The automatic loader-unloader then delivers the crank to a gaging fixture where diameters of the No. 1, 3 and 5 main bearings are checked. The crankshaft is transferred to the LeBlond PBA where all the pin bearings of two cranks are turned at the same time. Note: Loading racks shown are temporary for runoff only.

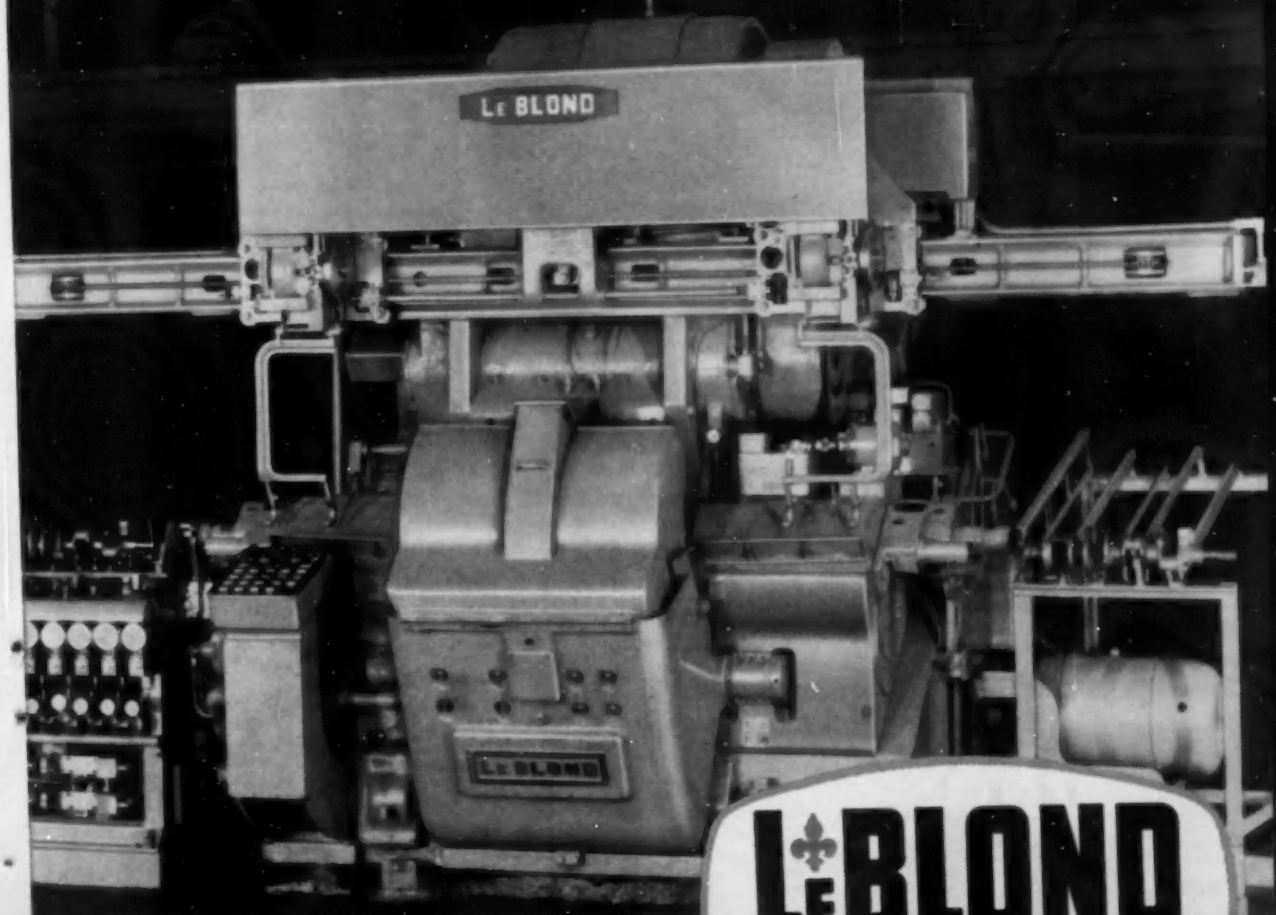
ANNOUNCED BY LeBLOND

Fifty-five precision-cast V-8 crankshafts per hour—highest production yet—are turned out by the latest LeBlond Automated Crank Turning Equipment.

The new unit consists of a LeBlond Automatic Line Bearing Center-Drive Lathe, a gaging fixture and a LeBlond Automatic Two-Spindle Pin Turning Machine. One operator can handle two such units. All turning and facing operations are completed on the crankshafts which have been prepared by spot milling and centering. Machine motions are sequenced electrically and hydraulically for continuous automatic operation.

You can benefit from LeBlond's experience as *the* pioneer of crankshaft-turning equipment over more than a half-century. Send us your crank-turning specifications for quotation.

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WORLD'S LARGEST BUILDER OF A COMPLETE LINE OF LATHES — FOR MORE THAN 67 YEARS.

AI TABLOID

(*Continued from page 75*)

General Electric Co. has developed a new film-like insulation to protect wires in electric motors from overheating.

Making its debut at the Geneva Automobile Show is the Fiat 600 utility car. It has a four-cylinder rear engine developing 21.5 bhp at 4600 rpm.

• • •

Ford Foundation has set aside $50 million to aid in raising salaries of faculty members in U. S. colleges and universities.

• • •

GM President Harlow H. Curtice has raised his estimate of U. S. 1955 production of cars and trucks for domestic and Canadian use and export from 7.6 million to 8.3 million units.

Northrop Aircraft, Inc., has received two subcontracts from McDonnell Aircraft Corp. totaling $2.5 million for fuselage assemblies and engineering work. . . . Ryan Aeronautical Co. has received a multi-million dollar contract from North American Aviation, Inc., to build fuselage sections for the F-86 fighter.

• • •

Airwork Atlantic, Ltd., 75 West St., New York 6, N. Y., has announced a new scheduled transatlantic air transport service for cargo only.

• • •

Magneto Div. of Fairbanks, Morse & Co., has begun the manufacture of clutches and starters for small industrial gasoline engines at its Beloit, Wis., plant.

• • •

W. J. Holliday & Co., Inc., and Monarch Steel Co. have become divisions of Jones & Laughlin Steel Corp.

• • •

Wright Air Development Center has established a new flight control center at Dayton, O.

• • •

The Steel Div. of Timken Roller Bearing Co. has announced a $360,000 steel mill expansion program.

• • •

A new passenger car brake, developed by Meadville Research Corp., is said to be under test by a major automobile manufacturer.

• • •

Brazilian regulations have been amended to prohibit the import of automobiles costing in excess of $3,500, including equipment.

• • •

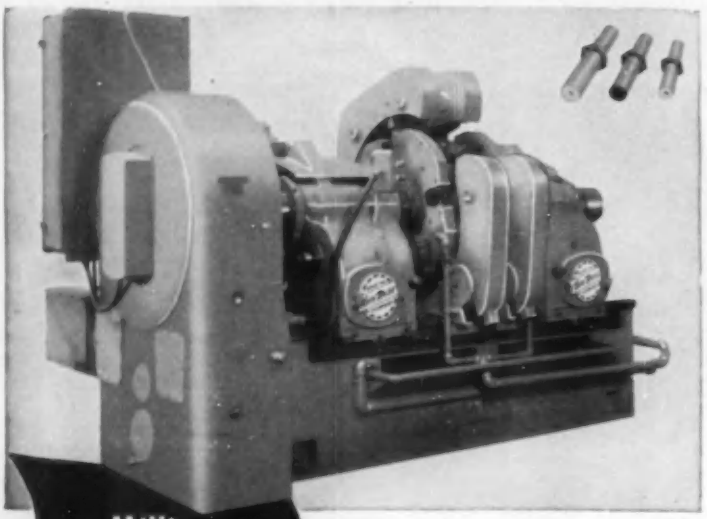
M. K. Kellogg Co. has announced a new K-Weld welding process for high-strength metals. It employs inert gas under controlled pressure inside a pipe or weldment while the root head of the joint is being made up with an inert gas-shielded arc.

• • •

Cornell Aeronautical Laboratory is working on the development of a lightweight pulsejet engine for helicopter rotor blade tips. . . . The de Havilland Super Sprite rocket engine has been cleared for quantity production.

• • •

Ingersoll Conditioned Air Div. of Borg-Warner Corp. is expanding its operations in the heating and air conditioning industries. It is producing a new line of gas-fired warm air furnaces from 70,000 btu to 200,000 btu input.



Milling and Centering Simultaneously and in Continuous Production

Here's an excellent example of how two entirely different operations can be combined on one machine. This Davis and Thompson continuous type Roto-Matic both mills and centers on both ends in one operation. Rough and finish milling cuts on the ends of the shaft and centering of both ends is completed with only one rotation of the fixture drum. The centering heads travel with the work station until centering operation is complete then drop back to next work station and repeat. Automatic equalizing clamping is provided to the fixture. Spindles have micrometric adjustment and spindle carriers are adjustable on the ways to accommodate shafts of various lengths.

FREE DATA on this and other Davis and Thompson machines is available in our bulletin No. 1000.

Roto-Matic

Davis and Thompson Co.

4480 N. 124th ST. MILWAUKEE 16, WISCONSIN



Industrial Monkey Gets a "Lift" from SHELBY SEAMLESS TUBING

The versatile Industrial Monkey* is ideal for all types of high work operations including tree-trimming, line work, street light servicing, painting, shipyard work, airplane servicing, and fire fighting.

The basic Industrial Monkey unit consists of a hydraulically-operated telescoping boom with a self-leveling work platform. The boom, mounted on a base, swings in a 270 degree arc and operates from the horizontal to vertical at a working height of 50 feet. All movements are electrically controlled, either from the work platform or from dual controls in the truck upon which the unit is mounted.

The agile swinging boom is comprised of an inner and outer member —both of Shelby Seamless Mechanical Tubing. Shelby Seamless is just the ticket for applications like this, for it offers the high strength, uniformity, dimensional accuracy, and dependability that only *seamless* can give. It is available in a complete range of diameters, wall thicknesses, and steel analyses to meet exacting requirements.

If you feel you'd like further information on applying Shelby Seamless Mechanical Tubing to your product, our engineers are at your disposal. Contact them at any time.

*Manufacturer's name on request.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
(Tubing Specialties)
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS **Shelby Seamless Mechanical Tubing**

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

All Shelby Seamless Tubing is pierced from solid billets of uniform steel. This is the one manufacturing method that assures absolute uniform wall strength

WALLS WITHOUT WELDS





UNITED STATES STEEL

MEN *in the* NEWS

(Continued from page 86)

R. M. Hollingshead Corp.—**George F. Sherrard** has been appointed manager of the Technical Service Div.; **Paul W. McDonald**, regional sales manager of the Western Div.; **H. Wilson DuVal**, regional sales manager of the Eastern Div.; and **William L. Carella**, industrial manager of the Western Div.

Solar Aircraft Corp.—**Wilder D. Baker** has been named director of public relations; **John M. Sayre**, supervisor of sales promotion; and **Philip M. Klauber**, chief administrative engineer.

Electric Storage Battery Co.—**R. E. Wright** has been named director of industrial and public relations.

Cloyes Gear Works, Inc.—**Paul W. Brannon** has been appointed manufacturing vice-president.

AMgears, Inc.—**T. V. Purvin** has been made general manager.



RUGGED ACCURATE

DETROIT "Vernatherm" CONTROLS

...for BIG Engine Cooling!

"Vernatherm" means a solid-charged thermostat which will take all the punishment that big engines and rough duty can give it, and give positive, precise coolant control *indefinitely!*

These thermostats were pioneered by Detroit Controls Corporation to meet the requirements of modern pressurized cooling systems. They have provided the answer to a great number of tough problems on Diesel, heavy-duty gasoline and jet engines. "Vernatherm" controls might be the solution to a situation in *your* engines . . . Call on DETROIT sales engineers for test data and actual results in the field . . . or write for Bulletin 213 which gives basic data on "Vernatherm" controls and their function in modern engine design.



DETROIT CONTROLS CORPORATION
6900 TRUMBULL AVE. • DETROIT 8, MICHIGAN
Division of AMERICAN RADIATOR & STANDARD SANITARY Corporation

Representatives in Principal Cities
Canadian Representatives:
RAILWAY AND ENGINEERING SPECIALTIES, LTD.,
Montreal, Toronto, Winnipeg.

AUTOMATIC CONTROLS FOR REFRIGERATION
AIR CONDITIONING • DOMESTIC HEATING • AVIATION • TRANSPORTATION • HOME APPLIANCES • INDUSTRIAL USES
SERVING HOME AND INDUSTRY
AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

Nash Motors Div., American Motors Corp.—**Thomas M. Hewitt** was named assistant public relations director.

Cadillac Motors Car Div., General Motors Corp.—**J. P. Schaupner** was promoted to assistant sales promotion manager.

Furane Plastics, Inc.—**Ben Carroll** has been chosen research director.

Detroit Steel Products Co.—**W. J. Maurer** has been elected a director.

Blue M Electric Co., Industrial Div.—**John D. Joyce** was recently appointed industrial sales manager.

Morey Machinery Co., Inc.—**Arnold S. Rostan** has become director of international operations.

General Electric Co.—**Todd M. George, Jr.**, is now manager of advertising and sales promotion, and **Edwin W. Riggs** has become manager of marketing administration and personnel development for the Schenectady Aeronautic and Ordnance operation.

Lurie Engineering Co.—**E. Gordon Ball, Jr.**, has been promoted to vice-president in charge of sales.

Westinghouse Electric Corp., Aviation Gas Turbine Div.—**A. G. Laas** has been appointed manager of quality engineering.

Conoflow Corp.—**Warren H. Brand** has been elected vice-president in charge of engineering and research.

Ryan Aeronautical Co.—**William P. Brotherton** has been promoted to public relations manager.

Consolidated Engineering Corp.—**C. William Bailey** was named manager of the analytical service laboratory, and **Robert C. Hoffman** was named supervisor of application engineering.

Eaton Mfg. Co., Valve Div.—**Howard R. Johnson** has been promoted to assistant factory manager, and **C. A. Kurrash** to plant production engineer.

Automotive Rubber Co., Inc.—**R. P. Ganchan** was made a vice-president and general manager, while **R. H. Glezen** is now a vice-president and general sales manager.

F. J. Stokes Machine Co.—**Jay Steiner** has been appointed advertising and sales promotion manager.

Ex-Cell-O Corp.—**E. Hugh Jones** has been promoted to operations manager of the Lima and Fostoria, O., plants, and **Richard A. Lodge** has been made assistant sales manager in charge of sales at the same plants.

Firestone Tire & Rubber Co., Midwest Div.—**P. B. Sewell** is now manager.

Allied Products Corp.—**Arthur J. Redmond** has been appointed a vice-president.

Federal Carbide & Cutter Co., Inc.—**Fred L. Amter** has been named sales manager.

Quaker Rubber Corp.—**W. H. Parkinson** is now advertising, publicity and sales promotion manager.

Niles-Bement-Pond Co.—**Frank R. Basney** has been made credit manager.

Boyertown Body & Equipment Co.—**Lloyd B. Fritz** has become director of sales.

DeKoven Mfg. Co.—**Thomas J. Fagan** is now sales manager.

General Controls Co.—**Huntly Briggs** has been appointed assistant advertising and sales promotion manager.

U. S. Relay Co.—**Lyle D. Bunce** was named national general sales manager.

American Brakeblok Div., American Brake Shoe Co.—**Thomas H. Bartlett** was made sales manager of ABK laminated plastics.

Cadillac Motor Car Div., General Motors Corp.—**F. B. Betts** is now general sales manager of the Detroit branch.

Chrysler Corp.—**G. C. Mitchell** has been appointed staff executive of the Central Purchasing Dept.

Automotive Transportation Co.—**Chester A. Smith** has become general manager.

Carboloy Dept., General Electric Co.—**E. J. Weller** has been named manager of tool sales.

Ford Motor Co.—**Charles H. Carroll** has retired as director of purchasing.

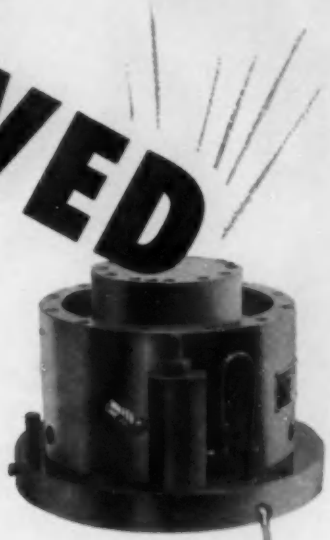
Chevrolet Motor Div., General Motors Corp.—**A. J. Altz** has retired as assistant chief engineer. **S. C. Richey** has been promoted to staff engineer in charge of the electrical and accessory groups, and **J. L. Murray** succeeds him as assistant staff engineer in charge of accessories.

Joseph T. Ryerson & Son, Inc.—**C. D. D'Amico** was named manager of sales at the Los Angeles plant, succeeding **C. H. Hallett** who moves to the Ryerson plant in Chicago for special assignment. **F. X. Kinsie** is now manager of the Stainless Steel Dept. at the Los Angeles plant.

(*Turn to page 498, please*)

SOLVED

weighing and testing problems by



EMERY force-measuring systems

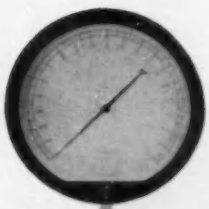
Emery load cells offer the fundamental solution to *any* force-measuring or weighing problem.

Operating on simple, basic physical principles, Emery systems are maintenance-free. Some units have been in service over 25 years without even recalibration!

RANGES: 0 - 10,000,000 pounds . . . **ACCURACY:** 1/10 of 1% of range . . . **RESPONSE:** less than ½ second . . . **TYPES:** self-contained hydraulic, open-flow hydraulic, pneumatic . . . **CELL DEFLECTION:** less than 0.005" . . . **APPLICATIONS:** Weighing, Jet Engine Thrust, Brake Testing, Torque Measurements, Strength of Materials, Process Control, Tank Weighing, Platform Scales, Etc.

Since 1872, Emery Force-Measurement Systems have been lowest in initial cost, in operating cost, and require no maintenance.

Write today for information on stock or specially designed systems to solve your force-measuring problems.



THE A. H. EMERY COMPANY, NEW CANAAN 8, CONN.

Please send me
☐ Literature on hydraulic weighing
☐ Literature on pneumatic weighing
NAME _____
POSITION _____
Attach to, or write on, your company letterhead.


? do fabric problems

make you see **REDS**

When off-color dyeing of an automotive fabric creates assembly-line problems—the situation bears looking into. There's a better chance of licking the problem if you use the right yarn.

It has been shown that Continuous Process Rayon has a consistent record for dyeing evenly, to the same density of color, and without streaks. Yard after yard and piece after piece. That's why most mills do specify Continuous Process Rayon when they're making a difficult or "critical" fabric.

With your kind of production line in the picture, automotive fabrics should certainly be handled as "critical". And it would be wise to insure their stability of color...and your continuity of production...by specifying Continuous Process Rayon.

Industrial Rayon Corporation
Cleveland, Ohio

Sales Office: 500 Fifth Avenue, New York 36, N. Y.

I·R·C



EVERYTHING
for spray painting and coating



HERE IS A SINGLE SOURCE for everything you need to spray paints or other coatings better, faster and more economically. You have more than 1100 *standard* products from which to choose...all developed from over 50 years of helping manufacturers improve their spray painting and coating operations.

IF YOU HAVE A PROBLEM involving the spraying of paint or other fluids...from water to heavy asphaltic materials...Binks engineers are ready to help you work out the simplest, best and lowest cost solution. If you want spray painting or coating equipment or service...fast ...a *single* call or order to one of Binks' 6000 Jobbers and Distributors will do the trick. It's simple to get exactly what you want, when you want it, when you standardize on Binks' *complete* line.

Binks
EVERYTHING FOR SPRAY PAINTING

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for a copy of Binks' big 956 Catalog-Data Book which describes the complete line, or write direct to the address below on your company letterhead. No obligation.



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3120-30 Carroll Ave. W., Chicago 12, Ill.

REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

MEN *in the* NEWS

(*Continued from page* 496)

Westinghouse Air Brake Co.—**Franklin E. Lowance** has been appointed director of research and engineering.

General Electric Co.—**Robert L. Gibson, Francis K. McCune,** and **Willard H. Sahloff,** were named vice-presidents.

Pace Corp.—**H. Richard Ford** was appointed sales manager.

Consolidated Engineering Corp., Engineering Div.—**Armand F. DuFresne** has been named chief product engineer.

Wales-Strippit Corp.—**Chesley Somerton** has become assistant sales manager.

Bunting Brass & Bronze Co.—**Walter H. Roberts** was named director of purchases.

Johnson Bronze Co.—**H. Roy Butts** is now vice-president in charge of sales.

Solar Aircraft Co.—**Leon H. Fish, Jr.,** has been named manager of the Dayton, O., office.

Wilton Tool Mfg. Co., Inc.—**Alex J. Vogl** is now vice-president of sales, and **William J. Ferrick** succeeds him as sales manager.

Allen Electric & Equipment Co.—**Ralph L. Countryman** was appointed sales manager.

Elastic Stop Nut Corp. of America—**E. F. Nason** has been named administrative assistant; **D. E. Lally,** general sales manager; **Donald B. Sorenson,** assistant general sales manager; and **James B. Duke,** product planning manager.

Bohn Aluminum & Brass Corp.—**T. W. Kuhn** was elected executive vice-president; **C. M. Adams,** vice-president; **E. K. Mann, Jr.,** vice-president and treasurer; and **W. J. Lane,** secretary.

Eaton Mfg. Co., Axle Div.—**R. C. Ochs** is now assistant general manager.

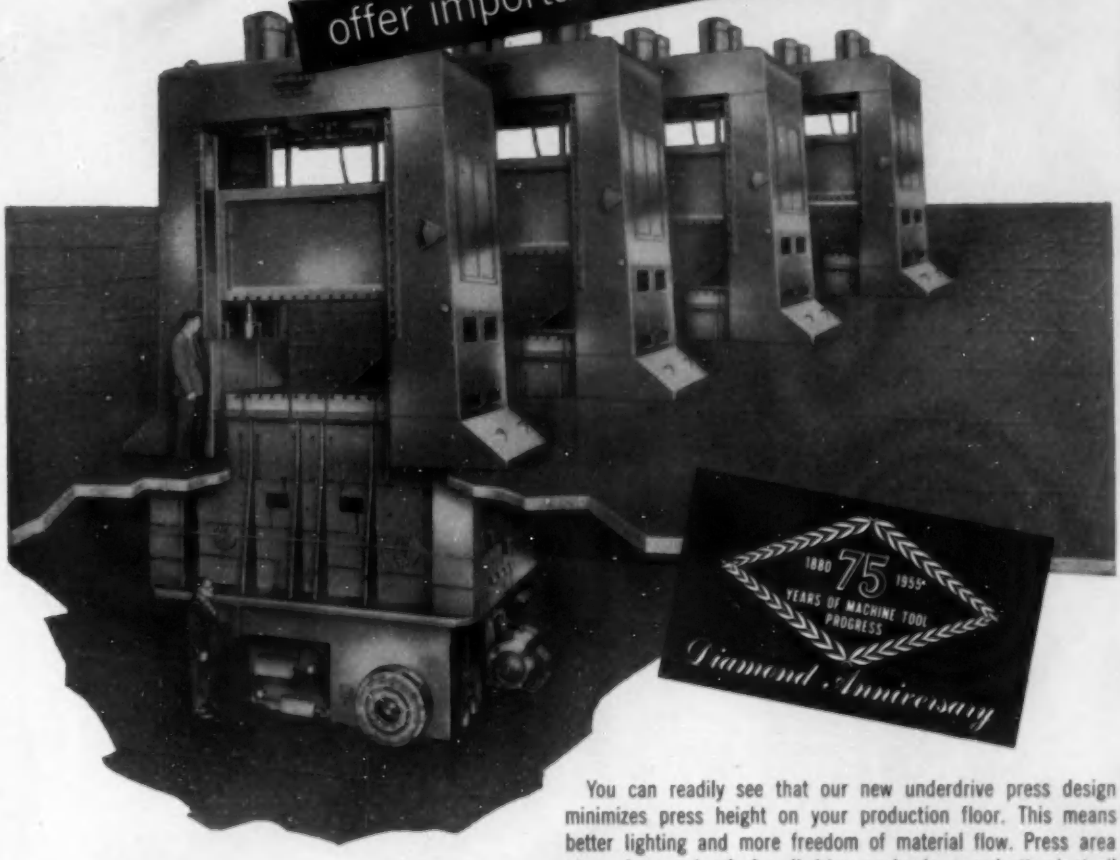
Stewart-Warner Corp.—**John R. Clarke** is now director of industrial relations.

E. F. Houghton & Co.—**Dr. Kurt C. Frisch** has been appointed assistant manager of research.

(*Turn to page* 502, *please*)

Cleveland
UNDERDRIVE
Presses

offer important production advantages!



- **Frees overhead space for material flow.**
- **Enclosed columns keep working parts clean.**
- **Production area is cleaner and safer.**
- **Stress is tension rather than compression.**
- **Faster, more convenient maintenance and adjustment.**

You can readily see that our new underdrive press design minimizes press height on your production floor. This means better lighting and more freedom of material flow. Press area stays clean and safe for all drive mechanisms and attendant oil and grease are in separate area. There are no overhanging projections to interfere with material flow. These presses are readily adapted to automatic feeds.

Many companies have already discovered the important operating economies gained by using Cleveland presses. They'll produce profits for you, too! Whatever your press requirements may be, let us show you why Cleveland presses are your best buy. Our recommendations are based on 75 years of machine tool progress.

AA-802

THE CLEVELAND PUNCH & SHEAR WORKS CO.

Established 1880

POWER PRESSES — FABRICATING TOOLS

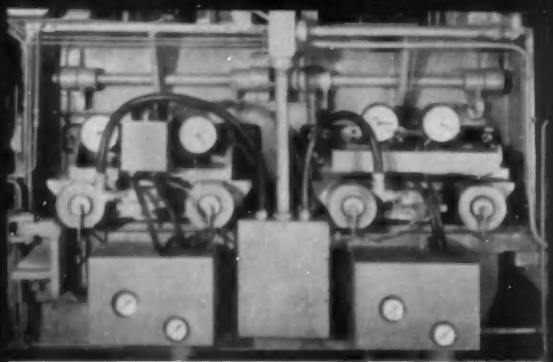
E. 40th & St. Clair Avenue, Cleveland 14, Ohio

Offices at: NEW YORK • CHICAGO • DETROIT
PHILADELPHIA • E. LANSING • OXFORD, O.

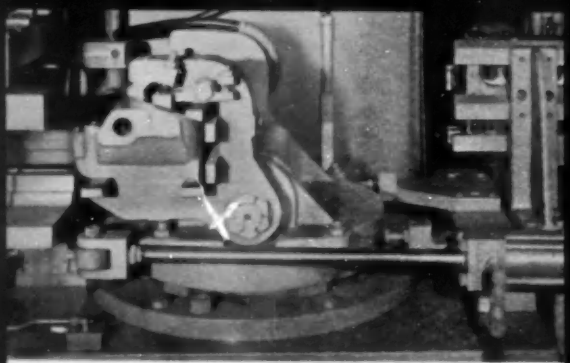
CITY FOUNDRY DIVISION · SMALL TOOL DEPARTMENT

NEW NATCO HOLEWAY *machines...*





AIR INSPECTION Stations No. 9, 29 and 30 of the first machine check reamed holes for diameter and location.



90° ROTATE and TURN Station No. 32 of the first machine rotates part 90° around each of two axes simultaneously for proper positioning in second machine.

ALL OPERATIONS COMPLETELY AUTOMATIC!

MACHINE No. 1 (35 Station)

1 Loading	1 90° Rotating
14 Working	2 Interference Relief
4 Checking	10 Idle
2 Chip Dumping	1 Unloading

MACHINE No. 2 (25 Station)

1 Loading	1 90° Rotating
13 Working	3 Idle
3 Checking	1 Ejecting and Replacing
1 Air Testing	1 Unloading

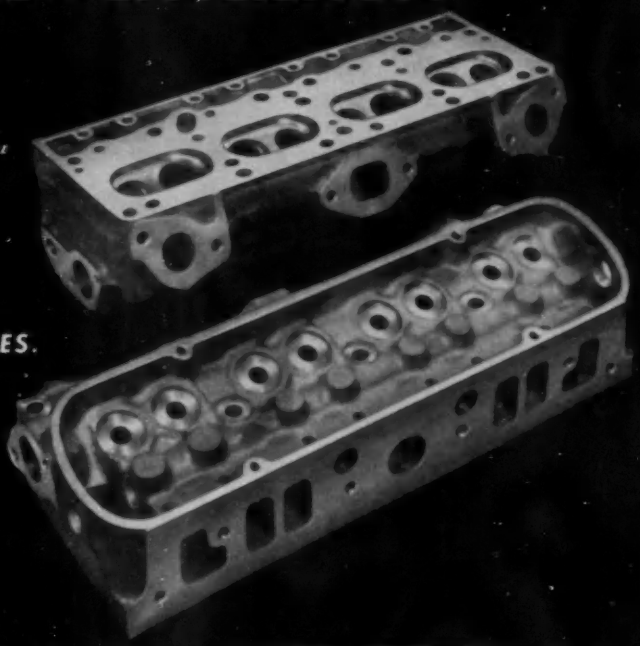
. . . ANOTHER MACHINE

NATCO ENGINEERED for quality and quantity production

106 CYLINDER HEADS

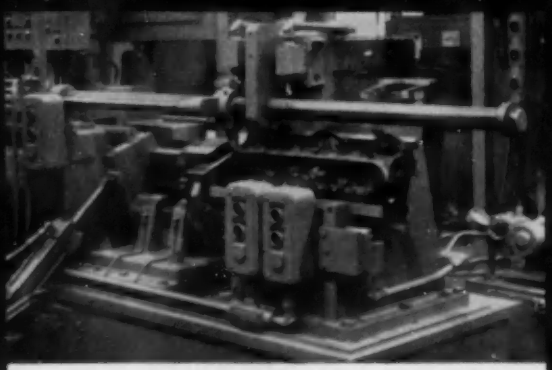
PER HOUR AT 85% EFFICIENCY!

DRILLS, REAMS, MILLS,
CORE DRILLS, COUNTERBORES,
SPOT FACES and CHAMFERS
ALL SIX SIDES.
REMOVES CHIPS,
INSPECTS HOLE DEPTHS,
SIZES and CENTER DISTANCES.
CHECKS OIL GALLERY
HOLE and EJECTS
DEFECTIVE PART and
REPLACES WITH
SALVAGED PART.





REJECTION and REPLACEMENT Station 17 of second machine air checks oil gallery hole, automatically ejects defective part, station 18 automatically replaces with salvaged part.



70° ROTATION Station No. 24 of the second machine rotates part 70° to bring valve hole in horizontal plane.



Call a Natco Field Engineer

to help you solve your problems in
Drilling, Boring, Facing and Tapping

NATCO

NATIONAL AUTOMATIC TOOL COMPANY, INC., Richmond, Indiana

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CHICAGO, 2009 Engineering Bldg. • DETROIT, 10138 W. McNichols Rd.
BUFFALO, 1807 Elmwood Ave. • NEW YORK, 35 Beechwood Ave., Mount Vernon

MEN *in the* NEWS

(*Continued from page* 498)

Chrysler Div., Chrysler Corp. — **Marc Prass** has been appointed product planning director.

Hercules Motors Corp. — **Frank J. Malone** has been made general works manager.

Greer Hydraulics, Inc. — **Arthur J. Droge** is now assistant sales manager.

General Electric Co.—**G. R. MacDonald** is now manager of engineering administration and personnel development in the Aircraft Products Dept.

Ettco Tool Co.—**Arthur E. Stehle** was made national sales manager.

Henry G. Thompson & Son Co.—**Frank J. Wandyes** has become plant superintendent.

Perfex Corp.—**Irving G. Bohrman** was elected president, and **Ernest H. Panthofer** was named vice-president.

Chrysler Corp.—The following divisional purchasing agents have been appointed: **Wesley G. Embury**, Plymouth Div.; **Donald W. Matzen**, DeSoto Div.; **John F. Bowes**, Chrysler Div.; **Stephen J. Roach**, Dodge Truck; **Kenneth E. Chamberlin**, MoPar Div.; **Arthur Fields**, Marine and Industrial Engine Div. and Trenton, Mich., engine plant; **Arthur H. Hilverkus**, Defense Operations Div.; and **Horace M. Coy**, Airtemp Div.

Steel Improvement & Forge Co.—**Kevin O'Donnell** has been promoted to sales manager of turbine and engine products.

Pastushin Aviation Corp. — **Edwin B. Stickle** and **John Sloan** were named military sales representatives. **Sam T. Wolfe** has been made administrative engineer.

Chas. Wm. Doepke Mfg. Co., Inc.—**Edward A. Carney** has been appointed Detroit district manager of NesTier small parts handling equipment.

Eutectic Welding Alloys Corp. — **Joseph F. Quaas** has become director of manufacturing and production.

Vickers, Inc. — **Robert H. Mezger** has been made head of the new district sales office in St. Louis, Mo., and **S. H. Murphy** has been named application engineer for a new branch office in Arlington, Tex.

Minnesota Mining & Mfg. Co., Adhesives & Coatings Div.—**Fred J. Wehmer** was named commercial development manager.

Acheson Colloids Co.—**A. T. Olsson** has been named an assistant sales manager.

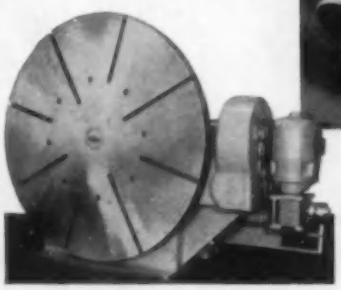
Convair Div., General Dynamics Corp.—**A. W. Morgan** has been appointed assistant manager for operations; **George A. Covington**, assistant to the manager; and **Roy H. Gilliland**, manager of quality control.

Timken Roller Bearing Co.—**Roy French** is now assistant traffic manager.

American Cable-Link Co.—**Leo T. Daigle** has been named general manager.

Industry's First High-Precision Universal Inspection Table





The New **ROTAB**

ROTAB now gives you fast, accurate checking of complex shapes at a minimum investment in fixtures:

1. **Microscopic Precision**—Direct reading to 5 seconds.
2. **Faster Multiple Inspection**—Simple inspection operations provide closer quality control on radial and angular checking.
3. **Finger-Tip Operation**—Quick acting, positive controls for table tilt and rotation.
4. **Easy Reading**—Checking and measuring planes conveniently positioned.
5. **Four Standard Sizes**—Select the model best suited to your jobs. Face plate diameters available are 12", 24", 36" and 48".

Write for the complete **ROTAB** *story.*

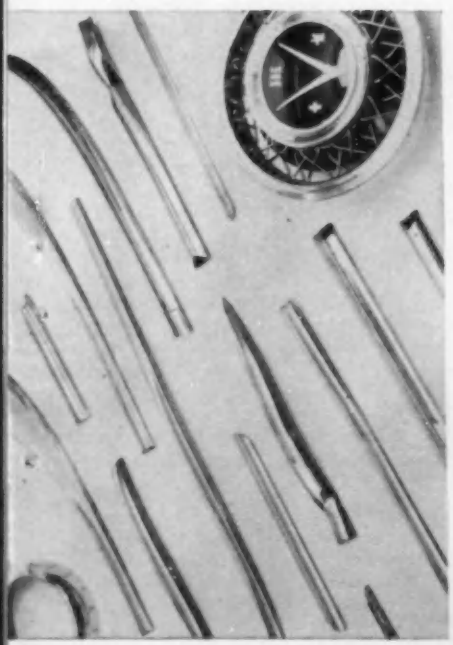
MACHINE PRODUCTS CORP.
6771 East McNichols Rd. Detroit 12, Mich.
Dept. A

Readers of AUTOMOTIVE INDUSTRIES *are always well informed*



He'll appreciate trim with

beauty that's more than skin deep



JUNIOR HAS A DRIVER'S LICENSE. And a checkbook backed by his spare-time earnings. Soon now all three will be at the used car dealer's.

The car that will get Junior's attention will be a car that has kept its good looks. It will have bright, sparkling trim—and that means Stainless Steel.

All car buyers like Stainless Steel trim, because its lasting good looks mean a better allowance at trade-in time. And keeping Stainless Steel trim looking well at all times is a relatively simple task free from laborious rubbing and polishing.

Stainless trim looks better longer because it's not just a surface beauty, but a beauty that can't be polished off. Car buyers know this — they've had other happy experiences with Stainless — and that makes the dealer's selling job easier.

When you give your customers trim with "beauty that's more than skin deep," make it from USS Stainless Steel. This service-tested cold-rolled strip is available in a complete range of grades and finishes to meet your fabricating requirements.

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STAINLESS STEEL

SHEETS · STRIP · PLATES
BARS · BILLETS

USS

PIPE · TUBES · WIRE
SPECIAL SECTIONS

S-40

UNITED STATES STEEL

For
A BETTER PRODUCT...

... use

FAIRFIELD GEARS

★ If GEARS are a vital part of the product you make, there is no finer recommendation for the QUALITY of your product than to be able to say it is equipped with "FAIRFIELD GEARS."

Long producers of the gears needed in high grade trucks and tractors, Fairfield now brings the same standards for GEAR PERFORMANCE to a wide variety of products: Agricultural Implements ... Power Shovels ... Machine Tools ... Diesel Locomotives ... Road Graders ... Lift Trucks ... Road Rollers ... Pump Drives ... Winches ... Military Vehicles ... and a host of others.

Fairfield's facilities are unexcelled. Here "under one roof" in a new and ultra modern plant designed especially for the purpose, Fairfield has everything needed for producing all kinds of gears: spur ... herringbone ... spiral bevel ... ground tooth spiral bevel... straight bevel...coniflex bevel...hypoid...zerol...worms and worm gears...splined shafts...differentials. Get acquainted with Fairfield's engineering and production facilities. Your inquiry will receive prompt attention. FAIRFIELD MANUFACTURING COMPANY, 2303 South Concord Road, Lafayette, Indiana.


HEAVY DUTY TRUCKS


AGRICULTURAL IMPLEMENTS


CONSTRUCTION MACHINERY


HEAVY DUTY ENGINES


TRACTORS


SPECIAL PURPOSE VEHICLES

Fine Gears Made to Order

FAIRFIELD



LAFAYETTE INDIANA

Industry News

(*Continued from page* 81)

Detroit Arsenal Testing New Type Power Plants

All types of power plants for possible use in military vehicles, including nuclear power units, are under study at the Detroit Arsenal. Col. George B. Petersen, head of research and development at the Arsenal, told 650 members of the SAE at a meeting there Feb. 28 that considerable development work is being done with gas turbines and also with gasoline engines operating under a Diesel cycle. The latter, he said, would be compression-ignition engines but would use gasoline which could be made available to widespread military operations throughout the world in adequate quantities. Diesel fuel procurement, on the other hand, would present quite a problem.

Col. Petersen touched briefly on the atomic engine phase in pointing out that the Arsenal is watching nuclear power developments. He said such a power plant could be built, but it would be so large that a vehicle weighing 70 tons or more (too heavy for military use) would be required to carry it.

The Arsenal also is studying all known types of automatic transmissions for military wheeled vehicles. These include some not yet announced publicly, such as those being developed by Spicer and Clark Equipment, Col. Petersen said.

He also revealed that the Arsenal is testing a vehicle equipped with the Boeing gas turbine and that the turbine program is getting considerable emphasis at present. He added, however, that new developments in power plants and vehicles require a lead time of 2½ to 3½ years before they actually get into production.

The Ordnance Corps, Col. Petersen concluded, has $55 million worth of defense contracts currently in force in the automotive industries. An additional $9 million worth of contracts are in process.

Two New Divco Plants Up Truck Production

Divco Corp. is now producing its delivery route trucks at an accelerated rate at two new plants completed recently in Detroit. The two new structures provide the company with an additional 4800 sq ft of floor space.

(*Turn to page* 506, *please*)

They have what it takes

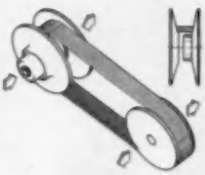
to reduce your centerless grinding costs

New

CINCINNATI FILMATIC No. 2 CENTERLESS GRINDING MACHINES

FILMATIC

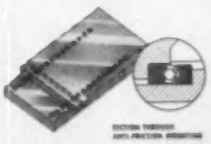
Smooth regulating wheel drive through variable pitch sheaves; infinite number of speeds, handwheel selected and tachometer indicated.



FILMATIC grinding wheel spindle bearings are still the best in the machine tool industry; no fuss, no bother.



Precision anti-friction slide under regulating wheel unit; split-hair dial adjustment is translated precisely to infeed movement.



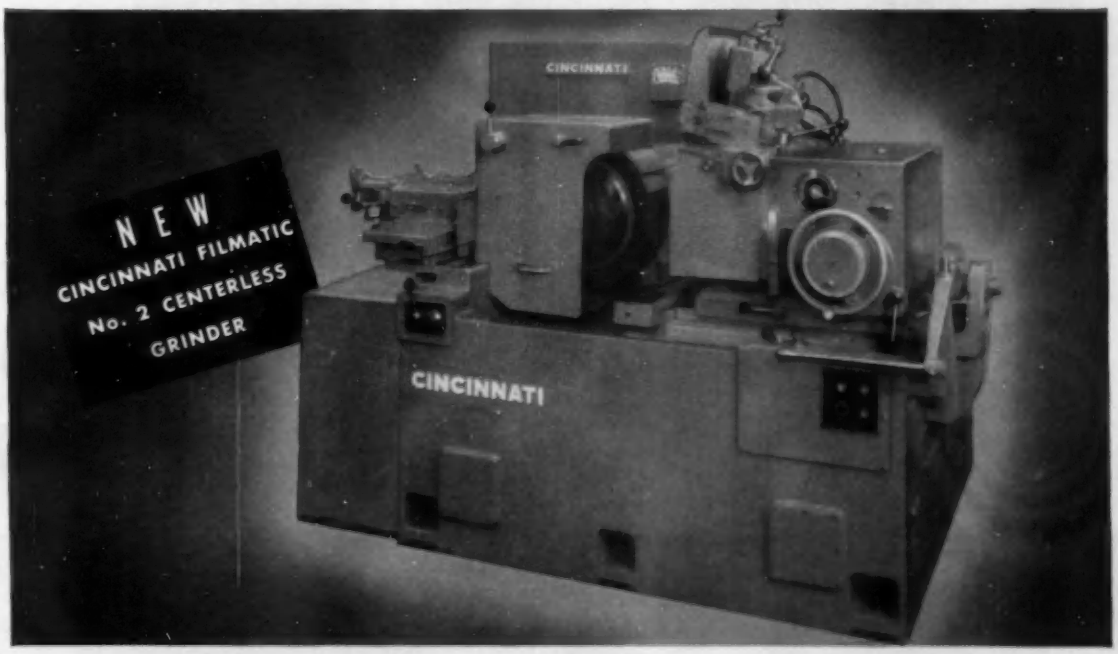
Thirty-three years of experience in centerless design and application has gone into the new CINCINNATI FILMATIC No. 2. You will find it more accurate, more versatile than ever before. Time-proved Cincinnati advantages have been retained . . . bed-rock grinding wheel spindle mounting; FILMATIC grinding wheel spindle bearings; double slide construction between bed and regulating wheel housing; simplified method of truing regulating wheel. And now these additional advantages are included . . . infinitely variable regulating wheel speeds; pre-loaded, precision ball bearing lower slide; pressure lubrication of regulating wheel spindle bearings; stabilized infeed screw. ¶ Of course, many more features desired by centerless grinder users are incorporated in the new CINCINNATI FILMATIC No. 2 Centerless Grinder. Would you like to know more about them? Write for new catalog No. G-644.

CINCINNATI GRINDERS INCORPORATED
CINCINNATI 9, OHIO

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CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES • CENTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES



Industry News

(*Continued from page 504*)

Use of Rubber Climbs Six Per Cent in Month

Use of rubber in the U.S. continues to grow. In January, new rubber consumption amounted to 125,666 long tons, nearly six per cent over December. Synthetic rubber use totaled 68,367 tons, against 57,299 tons of natural rubber, an increase of about 7½ per cent over December tonnage.

Delco-Remy To Build Fourth Battery Plant

Last spring the Delco-Remy Div. of General Motors Corp. began production of automotive storage batteries in its Anaheim, Calif., plant to meet requirements in the western states. Since it sees a further need for strengthening its market in that area, the division this spring will start construction on another plant at Olathe, Kan., which is expected to be completed in 1956.

The plant, to be located on a 75-acre-site GM acquired recently, will be the fourth unit in Delco-Remy's battery operations. In addition to supplying GM assembly plants in Kansas, Texas and Missouri, the Olathe facility will provide replacement batteries to United Motors Service distributors in the western states.

AMC to Give More Autonomy To Subsidiaries in Mexico

Richard T. Purdy, export manager of American Motors Corp., recently visited Mexico to study and familiarize himself with the local automobile market and its needs for the immediate future. American Motors has assembly plants and distributor organizations for its products within Mexico.

Under a contemplated expansion program, the company will aim on having its subsidiaries and distributors handle their own capital. Training of Mexican personnel for various operations would also be stepped up.

Record Output, Sales Of Cars For Quarter Seen by Hitchings

The most optimistic forecast for production and sales of automobiles during the first quarter comes from George P. Hitchings, manager of Ford's Economic Analysis Dept. He estimates that output for the three months will total about 2.1 million cars and that sales will soar considerably over the same period last year.

Although production schedules have been hiked to a record two million cars for the quarter, most car makers expect sales of 1.5 million cars during the period. They also forecast that slightly more cars than the above figure will be sold during the second quarter.

Douglas Increases Titanium Usage in DC-7 Airliners

Douglas Aircraft Co. has increased the quantity of titanium used in the construction of commercial airliners. Late models of the four-engined DC-7's now contain nearly 800 lb of the metal, compared to 450 lb used in each of the first planes of this series.

All but a small portion of the engine nacelle is constructed of titanium. Nacelles on "B" and "C" series have been enlarged by the addition of "saddle" fuel tanks, also built of titanium. Some of the nacelle frames, the landing gear doors, and the firewall webs also are fabricated from unalloyed titanium.

(*Turn to page 508, please*)

Announcing Something

huge

the LARGEST normalizing and full annealing furnace in any job shop west of Buffalo



- Capacity 100 Ton
- Handles Parts 40' Long
- Electric Cranes Handle Parts Up to 30 Ton
- Doors Never Opened Until Properly Cooled
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- Completely Automatic
- Electronic Temperature Control Within 2°
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Built expressly for the Jobbing Trade

NOR-COTE Incorporated

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Specialists in Stress Relieving • Normalizing • Spheroidizing
Shot Blasting • Cold Straightening • Protective Coatings

WASH THAT DIRTY STRIP
BEFORE SHEARING and BLANKING

McKAY
PRESS FEED AND CUT-UP LINES

The latest development in McKay coil feed lines is this new strip washing machine which thoroughly cleans the strip after it leaves the coil and before it passes through any subsequent feed rolls.



In most stamping plants a sizeable portion of metal finishing costs and quality control problems can be traced to the fact that some coiled steel is dirty and much of this dirt picks up on the rolls of the processing equipment. The dirt which carries over on the blanks may cause scratches in the drawn panels during the forming operations.

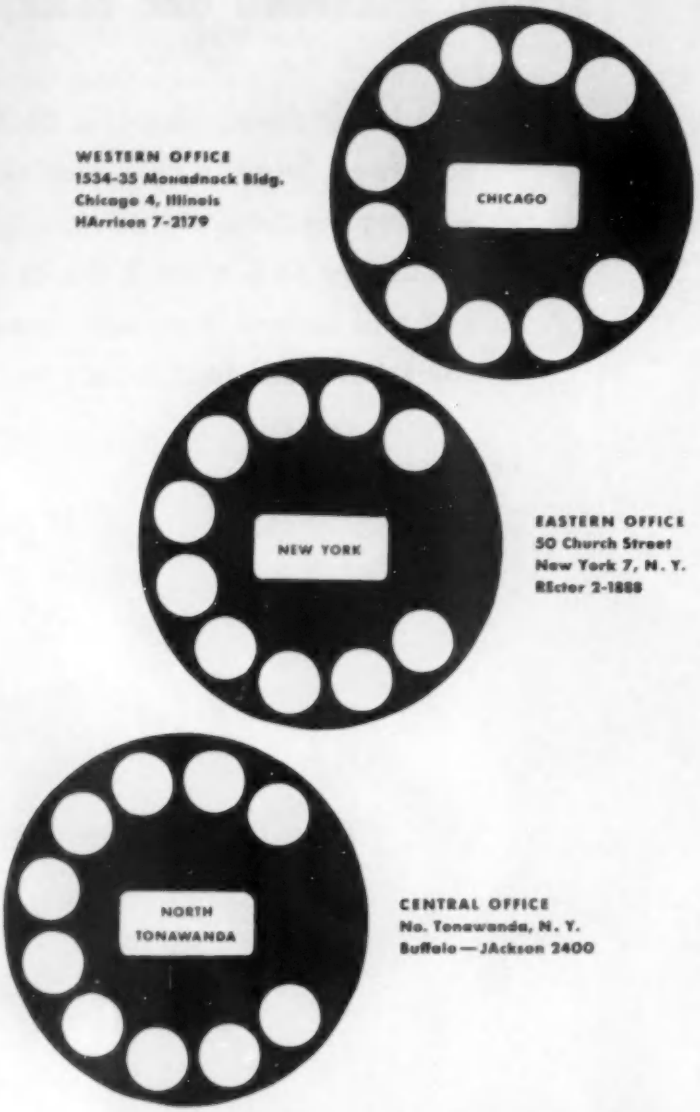
In several recent installations McKay has furnished a strip washing machine which utilizes high speed brushes and large volume solvent sprays to thoroughly clean the steel strip at high production speed.

CONSULT McKAY ENGINEERS IF YOU HAVE A PRESS OR SHEAR FEEDING PROBLEM. WE INVITE YOUR INQUIRIES.

The McKAY MACHINE Company
YOUNGSTOWN, OHIO

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ENGINEERS AND DESIGNERS OF EQUIPMENT FOR THE AUTOMOTIVE, FABRICATING AND STEEL INDUSTRIES



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NOW YOU HAVE OUR NUMBER

. . . get the right bolts when you need them

CUSTOMER SERVICE is the order of the day at Buffalo Bolt Company. Our organization has been streamlined to give you prompt personal attention . . . immediate information on prices and delivery. In addition to the phone numbers listed above, we will be glad to send you names, addresses and phone numbers of your district salesman and your expediting contact at the plant. We are geared to give you the service your account deserves. Contact us on your next order and see for yourself.

BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation

NORTH TONAWANDA, N. Y.

Making both — FASTENERS & FRIENDS — For 100 Years

Industry News

(*Continued from page* 506)

First Local Atom Group Being Set Up In Detroit

Plans to set up the country's first regional nuclear council in Detroit, consisting of companies in various fields, may set a pattern for other cities and states. First steps toward forming such organization were taken recently with the election of a nine-man steering committee which will outline the group's functions and procedures.

Designed to speed the exchange of information among engineers and scientists interested in industrial applications of atomic energy and its by-products, the group represents such varied fields as atomic power, social science, education, pharmaceuticals, medicine, and major industries and suppliers to the atomic field.

AMC Expects Sizable Increase In Car Sales This Fiscal Year

Although American Motors was somewhat late in introducing the 1955 line of Nash and Hudson cars, it is looking for a 25 per cent increase in sales for the fiscal year ending next Sept. 30. This would indicate a sales goal of about 170,000 cars this fiscal year, since sales of Hudson and Nash automobiles in the 12 months ended Sept. 30, 1954, totaled 135,794 units.

In order to reach its goal, AMC has been conducting an intensive advertising campaign and new incentive programs for dealers. Among the latter is a dealer volume investment fund, based on the total volume of cars invoiced to dealers. The company makes payments into the fund based on economies realized in purchasing and production as its sales volume increases, and a dealer's share in the fund increases proportionally with a rise in his sales.

Record Amount Paid By Ford For Ideas

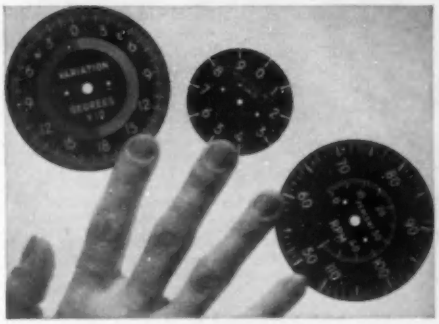
Ford Motor Co. last year paid out a record $748,421 to employes for ideas adopted by the company. This sum brought to $2.7 million the amount awarded by Ford for suggestions since the plan started in 1947.

Of the total 13,559 cash awards, there were four individual awards amounting to a maximum $3000 each.

(*Turn to page* 528, *please*)



2. TURN AND BANK INDICATORS are screened by operator Jack Conrad. Link finds stencils on Screen Process Film stay sharp, even on long production runs.



3. TOLERANCES of tiny dial markings are held to .003-.005 inch. Dimensional stability of Screen Process Film prevents distortion of fine lines and letters.



1. JOAN PARKES, technician in Link's Photographic Laboratory, prepares to photograph art work on Du Pont Screen Process Film. After the film is processed, it is sent to the silk screen section where screens are prepared for the paint shop.

Here's One Way Link Aviation, Inc., Speeds Production... Cuts Cost

A single model of the famous Link Trainer has hundreds of dials, controls and panels — all printed by screen process. At Link, screen printing is faster and cheaper — thanks to a large extent to Du Pont Screen Process Film.

Du Pont Screen Process Film has cut screen production time at Link by more than 50%. And, because the photo lab can enlarge or reduce art work in the camera, art preparation is easier and faster. Not only are costs reduced substantially, but stencils reproduce with photographic accuracy — straight lines don't waver, fine details screen sharp and clear.

Screen Process Film has proved more durable under Link's exacting use. Stencils can be used to print more pieces and still hold to finest tolerances. Production is faster, and again costs are reduced in the screen section and the photo lab, as well as in the paint shop.

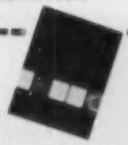
Like Link Aviation, you'll find Du Pont Screen Process Film will cut costs, speed production, improve results. Use the coupon below to get more information on this valuable production tool. E. I. du Pont de Nemours & Co. (Inc.), Photo Products Department, Wilmington 98, Del. In Canada: Du Pont Company of Canada Limited, Montreal.

DU PONT

SCREEN PROCESS FILM

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



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Wilmington 98, Delaware 183

☐ Please send me the free booklet "Du Pont Screen Process Film."

Name.....

Company.....

Street.....

City..... *State*.....

More Government Contract Awards

THIS latest list of Government prime contracts that have been awarded covers the period from January 28 to February 21, 1955. Items included in this list are for various types of automotive military equipment, including tanks, motorized gun carriages, trucks, airplanes, automotive components and spare parts, automotive maintenance equipment, etc.

ACTIVE GEAR COMPANY, INC., Chicago, Ill.
Motor vehicle parts—3465—$57,796

AIRBORNE ACCESSORIES CORP., Hillside, N. J.
Actuators, etc.—18—$107,859

AIRESEARCH MANUFACTURING COMPANY, Los Angeles, Calif.
Valve assys.—188 ea.—$39,800

ALCO VALVE COMPANY, St. Louis, Mo.
Blade-windshield, etc.—14 itm.—$34,365

Here's the Best Way

to see the superiority of FLEXON Thermostats



Take a Flexon Thermostat apart and reassemble its five parts . . . that's the way to find out why it gives an extra measure of performance.

Let's start with the saddle which is the foundation of the thermostat. It is an accurate brass stamping to which the bellows is soldered. Attached to the other end of the bellows is the hollow valve stem.

The thermostat is actuated by a specially developed Flexon charge that permits operation of the thermostat in both pressure and non-pressure cooling systems. This is accomplished by utilizing a charge that will produce sufficient internal pressure *within the operating range* of the thermostat to permit it to function against the system pressure. This charge also results in faster opening and closing to provide more accurate coolant temperature control.

Mounted on the saddle is the valve seat. This, too, is an accurate stamping in which *the stem guide is an integral part*. This means that the stem guide is *always* perfectly centered. It cannot be installed off center in a way that might cause binding or imperfect seating of the valve.

The valve stem extends through the guide; the top plate is attached to the stem by means of a threaded fitting. The charge is sealed by closing the passage in the stem guide. The top plate is then adjusted so that opening of the valve begins at exactly the desired temperature. Once this is set, the top plate is soldered into position.

This is the Flexon Thermostat . . . the design makes the big difference to give you more efficient, trouble-free performance. Write for full information on Flexon Thermostats to meet your requirements.

Flexonics *Corporation*

FLEXON BELLOWS DIVISION

1396 S. THIRD AVENUE • MAYWOOD, ILLINOIS

FORMERLY CHICAGO METAL HOSE CORPORATION

Flexon identifies products of Flexonics Corporation that have served industry for over 50 years.

Manufacturers of flexible metal hose and conduit, expansion joints, metallic bellows and assemblies of these components.

In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

AMERICAN AIR FILTER COMPANY, INC., Herman Nelson Div., Moline, Ill.
Engine preheater, trailers—211—$45,372

AMERICAN BOSCH ARMA CORP., Arma Div., Garden City, L. I., N. Y.
Repair parts for gyro compasses—960—$38,842

AVCO MANUFACTURING CORP., Lycoming Div., Williamsport, Pa.
Spare parts—36,064 ea.—$186,268

THE BAKER-RAULANG COMPANY, Cleveland, Ohio
Trucks fork, electric—17—$60,022

BARBER-COLMAN COMPANY, Rockford, Ill.
Actuators—various—$25,484

BELL AIRCRAFT CORP., Fort Worth, Texas
Bubble assy: parts—various—$32,828
Helicopters, spare parts, etc.—24—$1,271,984
Type H-13H helicopters—2—$136,137

BENDIX AVIATION CORP., Bendix Products Div., South Bend, Ind.
Brake assys.—5078—$1,382,891
Maintenance parts—various—$115,751
Carburetors—111—$138,523

BENDIX AVIATION CORP., Bendix-Skinner Div., Royal Oak, Mich.
Filter, maintenance parts—various—$26,745

BENDIX AVIATION CORP., Eclipse-Pioneer Div., Teterboro, N. J.
Starter—1604—$351,095
Indicator, manifold pressure—$130,896
Bearings—20240 ea.—$26,514
Transmitter, torque pressure — 2440—$201,300

BENDIX AVIATION CORP., Red Bank Div., Eatontown, N. J.
Motor generators—$1,156,877
Inverters—500 ea.—$543,035

BENDIX AVIATION CORP., Scintilla Div., Sidney, N. Y.
Parts: for use on Pratt & Whitney R4360 aircraft engines—various—$326,384

BERKLEY MACHINE PRODUCTS, Detroit, Mich.
Motor vehicle parts—372—$35,898

ALLAN U. BEVIER, INC., Baltimore, Md.
Aircraft lubricating oil servicing unit, truck mounted—53—$112,163

BOEING AIRPLANE COMPANY, Seattle, Wash.
Design components for improved Boeing model 502 engine—$172,652

GEO. W. BORG CORP., Borg Equipment Div., Janesville, Wis.
Indicators—$532,020

BORG-WARNER CORP., Mechanics Universal Joint Div., Rockford, Ill.
Shaft, assy., propeller—550—$26,951

BORG-WARNER CORPORATION, Pesco Products Div., Bedford, Ohio
Motor assys.—$77,966

CATERPILLAR TRACTOR COMPANY, Peoria, Ill.
Motorgraders scrapers—10—$96,337
Crawler tractors—17 ea.—$249,009

CAMLOC FASTENER CORPORATION, Paramus, N. J.
Stud assy. cowling fastener—270,400 ea.—$56,718

(Turn to page 512, please)



BEEKMAN STREET PLANT
Where valves, piston pins and other steel parts are produced for the Automotive Industry.

ALUMINUM INDUSTRIES inc.

marches forward with the automotive industry

As a regular supplier of pistons, valves, many types of steel parts and aluminum castings to automotive manufacturers, Aluminum Industries, Inc. shares in the responsibility for continually giving the automotive buying public a better product.

Aluminum Industries was among the first to develop aluminum pistons for automotive engines. Since those early days we have steadily augmented our production and technical facilities to do our part in helping the automotive industry achieve its yearly goals of finer performance and better values.

Your inquiry is invited.

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ALUMINUM PERMANENT MOLD AND SAND CASTINGS • HARDENED, GROUND AND FORGED STEEL PARTS

WERK ROAD PLANT
Recognized as one of today's largest and most modern aluminum foundries for the production of automotive pistons and parts.

"LET'S KWIK-CHEK IT JIM"



FAST ACCURATE

KWIK-CHEK

A NEW OUTSTANDING METHOD IN THE FIELD OF GAGING SMALL DIAMETER HOLES

PRECISION HOLE GAGES



DIRECT ACCURATE READINGS

within 5/10,000 of an inch over entire scale KWIK-CHEK gives you QUALITY CONTROL of small drilling and punching operations. Reading scale automatically locks at exact diameter reading. Eliminates "feel" inaccuracy.

ENGINEERS
INSPECTORS - FOREMEN

Use KWIK-CHEK for high precision work, fast accurate inspections and labor saving methods.



Here's how easy it is to use KWIK-CHEK

1. Release clutch, needle snaps into place.
2. Insert needle into hole being calibrated.
3. Slide barrel down until flush.
4. Remove gage and read magnified scale.

Factory Guaranteed

$110.00
Set of 3
Includes leather covered case for 3 gages and precision steel setting gage

KWIK-CHEK GAGES
are available in 3 models
#20 Range .025" to .130"
#30 Range .130" to .255"
#40 Range .255" to .380"

$37.50
Each
Includes leather covered case and precision steel setting gage

NEW STANDARD DIVISION
U. S. EXPANSION BOLT CO., YORK, PA., Dept. AI-3
Ask your Jobber for FREE Brochure

Government Contract Awards

(*Continued from page 510*)

CESSNA AIRCRAFT COMPANY, Wichita, Kan.
Door assy.—39 itms.—$74,200
Stabilizer assy.—41 itms.—$84,513
Boot assy.—45 itms.—$69,055

CHICAGO PNEUMATIC TOOL COMPANY, New York, N. Y.
Parts for Diesel engines—$131,696

CONTINENTAL MOTORS CORP., Muskegon, Mich.
Maintenance packet engines—575 ea.—$433,197

COOPER BESSEMER CORP., Mount Vernon, Ohio
Repair parts for Diesel engines—2637—$32,265

CURTISS-WRIGHT CORP., Propeller Div., Caldwell, N. J.
Spare parts—$100,000
Propeller conversion parts—4 set—$167,511
Kit assy. for replacement of non-shot peened blade gears—350 ea.—$332,241

CURTISS - WRIGHT CORPORATION, Wright Aero Div., Wood-Ridge, N. J.
Engines—29 ea.—$706,899
Spare tools and ground handling equipment for aircraft engines—$310,000

DONALDSON COMPANY, INC., St. Paul, Minn.
Exhaust muffler—1132—$123,059

DOUGLAS AIRCRAFT COMPANY, Santa Monica, Calif.
Maintenance parts—various—$84,580

DOUGLAS AIRCRAFT COMPANY, INC., Long Beach, Calif.
Airplanes—RB-66B, B-66B and RB-66C—$128,447,632

FAIRBANKS MORSE AND COMPANY, Fair Lawn, N. J.
Repair parts for Diesel engines—95,294—$395,551

FAIRBANKS MORSE AND COMPANY, New York, N. Y.
Repair parts for Diesel engines—55,822—204,757

FARGO MOTOR CORPORATION, Washington, D. C.
Trucks—7 ea.—$26,090
Power wagons—50 ea.—$115,139

FIRESTONE TIRE AND RUBBER CO., Los Angeles, Calif.
Leading edge fuel cells—235 ea.—$80,605

FORD MOTOR COMPANY, Ford Div., Washington, D. C.
Trucks—18 ea.—$43,348

GAR WOOD INDUSTRIES, INC., Wayne, Mich.
Spare parts—12,510 ea.—$164,735

GENERAL ELECTRIC COMPANY, Schenectady, N. Y.
Aircraft generator—406 ea.—$149,814

GENERAL MOTORS CORPORATION, Dayton, Ohio
Propeller kits—2238—$663,697

(*Turn to page 514, please*)



**The Oakite CrysCoat Cleaning-Phosphating Process for preparing metals for painting*

CATERPILLAR-built Tractors and Scrapers have been tackling tough earth-moving jobs for fifty years. Beneath the famous yellow paint finish of these big sluggers is a fine coating of CrysCoat. It helps make the finish stand up under all kinds of heavy punishment.

There's an Oakite CrysCoat Process to suit your particular set-up :—

1. Zinc phosphating in spray washer
2. Zinc phosphating in tank
3. Iron phosphating in spray washer
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Each CrysCoat Process gives you a fine phosphate foundation for long-lasting paint adhesion.

Each CrysCoat Process protects against corrosion under the paint.

Each CrysCoat Process is easy to control.

Each CrysCoat Process is solidly backed by nationwide Oakite Service that unconditionally guarantees satisfaction.

Illustrated literature describing the Oakite CrysCoat Cleaning-Phosphating Process gladly mailed on letterhead request.
Oakite Products, Inc., 49 Rector Street, New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE

CrysCoated Products Look Better . . . Last Longer!

Technical Service Representatives Located in Principal Cities of United States and Canada

(*Continued from page 512*)

GENERAL MOTORS CORP., Allison Div., Indianapolis, Ind.
J33-A-18A turbo-jet engines—97—$680,940

GENERAL MOTORS CORP., Cleveland Diesel Engine Div., Cleveland, Ohio
Repair parts—1570—$79,977

GENERAL MOTORS CORP., Detroit Diesel Engine Div., Detroit, Mich.
Repair parts—719—$40,301

GENERAL MOTORS CORP., GMC Truck & Coach Div., Pontiac, Mich.
Tools and equipment—1—$37,886

GENERAL MOTORS CORP., New Departure Div., Bristol, Conn.
Bearings—39,932 ea—$27,728

B. F. GOODRICH COMPANY, Dayton, Ohio
Wheels—540—$27,315
Brake assys., wheel assys.—3565—$2,299,424

GOODYEAR TIRE AND RUBBER, Akron, Ohio
Wheel assy., brake assys., and brake assys.—3252—$1,585,627
Brake linings—11,574 ea.—$26,699
Wheel assemblies—5041—$157,854

GRAY MARINE MOTOR CORP., Detroit, Mich.
100 hp Diesel engine complete—12—$43,166

HYDRO-AIRE, INC., Burbank, Calif.
Maintenance parts for J57P9 engines—various—$49,937
Valves—various—$50,620
Actuator assy., screwjack and actuator rotary air plug—2209—$330,335

HYSTER COMPANY, Portland, Ore.
Trucks, fork—3—$26,102

INTERNATIONAL HARVESTER COMPANY, Washington, D. C.
Trucks—5 ea.—$18,129
Vehicles—258—$1,855,005

JACK & HEINTZ, INC., Cleveland, Ohio
Starter, a/c, Type K-1—368 ea.—$87,786
Starter—1184 ea.—$252,310
Motor generators—2500 ea.—$662,623

KEARNEY AND TRECKER CORPORATION, Milwaukee, Wis.
Milling machine high speed, heavy duty—17—$282,179

KENWORTH MOTOR TRUCK CORP., Seattle, Wash.
Modify truck, cargo, 15 ton—job—$53,649

LEAR, INC., Grand Rapids, Mich.
Actuators, screwjacks and flexible shafts—$343,359

LEAR, INC., Lear-Romec Div., Elyria, Ohio
Pump and motor assy.—160 ea.—$47,432

LOCKHEED AIRCRAFT CORP., California Div., Burbank, Calif.
Generators and alternator drives—13 ea.—$62,308
Parts: maintenance—various—$29,685

THE McKAY COMPANY, Pittsburgh, Pa.
Motor vehicle parts—28,268—$108,074

NATIONAL SUPPLY CO., Superior Engine Div., Springfield, Ohio
Parts for Diesel engine—$32,038

NEW YORK AIR BRAKE COMPANY, Watertown, N. Y.
Pumps, hydraulic—various—$414,978

NORTH AMERICAN AVIATION, INC., Columbus Div., Columbus, Ohio
Maintenance parts—various—$78,076

PARKER AIRCRAFT COMPANY, Los Angeles, Calif.
Valve assy.—110 ea.—$44,226

PRECISION AUTOMOTIVE COMPONENTS CO., St. Louis, Mo.
Motor vehicle parts—18,860—$37,071

REO MOTORS, INC., Lansing, Mich.
Motor vehicle parts—24,881—$193,574

RYAN AERONAUTICAL COMPANY, San Diego, Calif.
Nacelles—$31,333

SAWYER BAILEY CORPORATION, Buffalo, N. Y.
Motor vehicle parts—876—$79,532

SAGINAW PRODUCTS CORPORATION, Saginaw, Mich.
Trailer, warehouse, 6000 lb. capacity—40—$100,860

SPENCER SAFFORD LOADCRAFT, INC., Augusta, Kan.
Trailer, rocket—12 ea.—$30,069

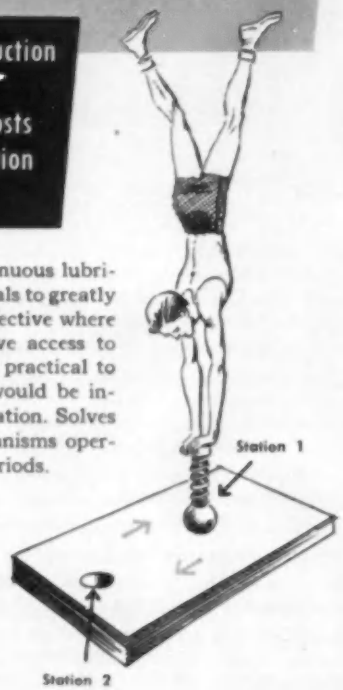
SPERRY PRODUCTS, INC., Danbury, Conn.
Repair parts for hydraulic controls—480—$31,223

STANDARD TRAILER COMPANY, San Leandro, Calif.
Trailer, Mark II—108—$281,224

(*Turn to page 516, please*)

SURF-KOTE processing IMPROVES PERFORMANCE

- Lengthens life of production machinery
- Lowers maintenance costs
- Solves difficult lubrication problems



SURF-KOTE forms a hard continuous lubricating film over the surface of metals to greatly increase wear life. Particularly effective where reactive chemicals or vapors have access to bearings. **SURF-KOTE** makes it practical to place bearing in locations that would be inaccessible for conventional lubrication. Solves the problem of lubricating mechanisms operating intermittently over long periods.

Case History "A" 264% longer wear

SURF-KOTE holds up longer. Prior to Surf-Kote processing, the best record was 10,000 indexes, from station 1 to station 2. *After* processing with Surf-Kote, performance jumped to 150,000 indexes without failure.



Parts may be processed in your own plant or by us
Drop us a card today for a copy of the **SURF-KOTE** illustrated folder; also **SURF-KOTE** Surface Preparation and Application Specification Sheets.

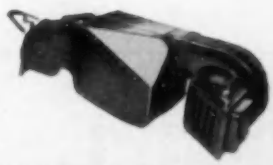
Hohman Plating & Mfg., Inc.
905 East Third Street, Dayton 2, Ohio

NOT A COLD IN THIS CARLOAD!





New Chevrolet Deluxe heater and defroster features illuminated panel with new slide-easy controls.



New Chevrolet heater-defroster maintains even car temperature ...provides panoramic defrosting.

Wind-swept, winter-whipped highway outside! But inside, the whole family rides in comfort . . . snug, warm, safe. Windows are clean and clear—temperatures are healthfully even throughout the car. That's because Harrison's Deluxe heater and defroster for the all-new Chevrolet has been *engineered for the job.* In building heaters and defrosters, it's engineering, research and production that count . . . and Harrison has been a leader for more than 40 years in the field of automotive heat transfer and control. That's why you'll find Harrison heaters and defrosters, as well as radiators, on Cadillac, Buick, Oldsmobile, Pontiac and Chevrolet. If you have a hot or cold problem, look to Harrison for the answer!

HARRISON RADIATOR DIVISION, GENERAL MOTORS CORP., LOCKPORT, N. Y.

HARRISON

TEMPERATURES MADE TO ORDER

PEARLITIC MALLEABLE CASTINGS



If service conditions are unusually rugged and you're troubled by high manufacturing costs—look to pearlitic malleable castings!

Pearlitic malleable has high fluidity that casts easily into complicated shapes. It resists wear under heavy loads at high speeds . . . has high ultimate strength . . . possesses excellent non-seizing properties for bearing surfaces . . . can be given a very smooth finish where desired . . . and can be either liquid quenched or air quenched. And perhaps *most important of all, pearlitic malleable machinability index ranges from 80 to 90* (B1112 steel = 100).

So look your product over critically. Then check pearlitic malleable castings. They can replace more expensive methods of fabrication or manufacture . . . can lead to reduced weight, less machining time . . . fewer assembly operations . . . *greater sales appeal for your product.* AA-166

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY
Cleveland 6, Ohio

The Nation's largest independent producer of malleable and pearlitic malleable

(Continued from page 514)

STEWART-WARNER CORPORATION, Chicago, Ill.
Motor vehicle parts—46,040—$134,653

STEWART-WARNER CORP., South Wind Div., Indianapolis, Ind.
Heat exchange for P4Y-2 aircraft—313 ea.—$107,594

STUDEBAKER-PACKARD CORP., Detroit, Mich.
Engine, less the generator, subbase, coupling fresh water, heat exchanger and connecting piping—8—$299,420
Repair parts for Diesel engines—4683—$25,042

SUN ELECTRIC CORPORATION, Chicago, Ill.
Stand, test hydraulic system, gasoline engine driven—762 ea.—$2,050,262

SUNDSTRAND MACHINE TOOL CO., Aviation Div., Rockford, Ill.
Transmissions and governor assys.—231 ea.—$972,741

SURFACE COMBUSTION CORP., Janitrol Aircraft-Auto Div., Columbus, Ohio
Heater assy.—15 itms.—$268,705

THOMPSON PRODUCTS, INC., Cleveland, Ohio
Fuel pump assys.—735 ea.—$129,411

TOWMOTOR CORPORATION, Cleveland, Ohio
Trucks, fork lift—420—$1,698,484

UNITED AIRCRAFT PRODUCTS, INC., Dayton, Ohio
Fuel pumps—various—$52,142

V-J INDUSTRIES, INC., Indianapolis, Ind.
Motor vehicle parts—25,550—$32,284

VARO MANUFACTURING CO., INC., Garland, Texas
Aircraft circuit tester—644 ea.—$156,472

VICKERS, INC., Detroit, Mich.
Motor assys. and hydraulic pumps—various—$103,115
Pump assy.—575 ea.—$298,396
Housing stud—8 itms.—$30,775
Relief valves—$42,277

VICKERS, INC., Vickers Electric Div., St. Louis, Mo.
Motor generators 25 KW—10—$163,435

VICTOR MANUFACTURING & GASKET CO., Chicago, Ill.
Motor vehicle parts—14,232—$42,774

WESTINGHOUSE ELECTRIC CORPORATION, Dayton, Ohio
Generators—4511—$330,745
Motor assys.—$121,765

WILLYS MOTORS, INC., Toledo, Ohio
Truck, pickup body—9 ea.—$13,832

AUTOMOTIVE INDUSTRIES . . .

is your News Magazine of Automotive and Aviation

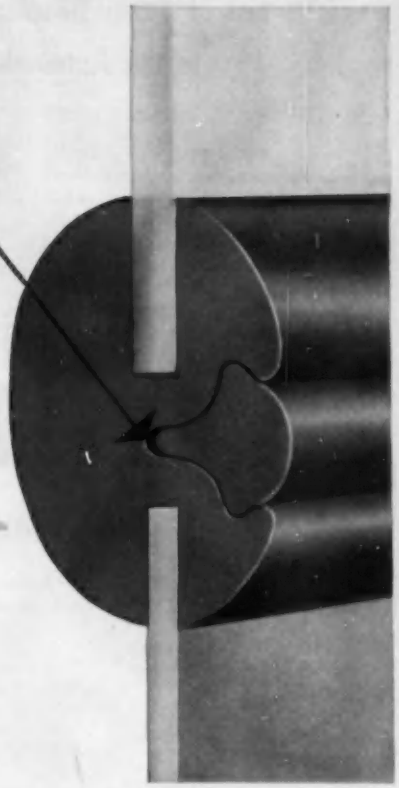
MANUFACTURING

It's this separate

FILLER STRIP

that puts more pressure on the fence and the glass... allowing new freedom of design!





The filler strip makes possible these other Inland advantages!

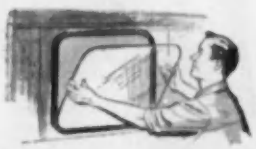
Today, weather stripping is a "snap". And, it's the snap of Inland's new weather strip that does it! Just think of the design freedom you have—now that weather strip problems are gone. With Inland Self-Sealing Weather Strip, *you need make no provisions for cement, clamps, moldings or channels. You are assured a water-tight seal every time!*

The patented Inland Filler Strip enables the installer to compress the sealing strip *after* the glass is in place. And because it eliminates all the headaches of trying to force the glass into a compressed groove, this is the easiest weather strip to install!

INLAND MANUFACTURING DIVISION
General Motors Corporation • Dayton, Ohio



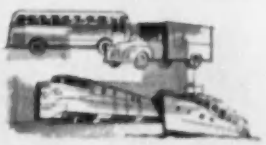
LEAK PROOF! Permanently leak proof, because it seals both glass and body panel under powerful compression.



EASY GLASS REPLACEMENT! Less lost time for vehicles—broken glass can even be replaced on the road, if necessary.



A POSITIVE SEAL! New filler strip puts more pressure on the fence and the glass—assures complete positive weather proofing every time.



VERSATILITY! Ideal for vehicles, booths, trains, gasoline pumps, buildings, marine windows—for positive, permanent sealing of any window or panel!

INLAND MANUFACTURING

Self-Sealing WEATHER STRIP

A List of Silver Brazing Alloy Applications in the Automobile Industry

THIS survey, prepared by Handy and Harman, indicates 76 automobile parts now being silver alloy brazed as compared with 57 parts reported in 1949. There are at least 242 different joints involved. Automobiles are an expanding field of applications for silver brazing alloys regardless of whether 4,000,000 or 5,000,000 units are produced annually. Most of these jobs are done by automotive parts sub-contractors.

PARTS	Approx. No. of Joints per Unit
1. Air Brakes	4
2. Air Jacks	4
3. Bearing Strip	1
4. Brake Cylinder	4
5. Brake Drums	2
6. Breather Tube to Oil Screen Housing	1
7. Bus Seat Tubing	6
8. Bus Water Lines	6
9. Cam Shaft	4
10. Chain Case Cover	1
11. Clutch Unit	2
12. Cover Plate—Valves	1
13. Cylinder Sleeve	4
14. Diesel Fuel Lines	20
15. Diesel Pre-Combustion Chamber	2
16. Distributor Points	1*
17. Distributor Stamping	2
18. Drain Plug Fitting-Oil Pan	1
19. Drive Shaft	2
20. Electric Air Horn	2
21. Fluid Coupling Parts	2
22. Fluid Drive Parts	2
23. Foot Accelerator Parts	1
24. Gasoline Filter	4
25. Gasoline Heater	4
26. Gasoline Tank Filler Neck	1
27. Gasoline Tank Spuds	2
28. Gear Shift Lever	2
29. Glove Compartment Trim	2
30. Governors	2
31. Grease Guns	2
32. Grill Assembly	54
33. Head Light Frames	2
34. Heater Assembly	2
35. Horn Ring Spokes	3
36. Horn Wire Adapter	1
37. Hydraguide Power Steering	8
38. Hydraulic Brakes	4
39. Hydraulic Jacks	2
40. Hydraulic Lifts	2
41. Hydromatic Cylinder	3
42. Instruments	2
43. Intake Manifold	6
44. Lamps	2
45. Motor Block Repair	6
46. Muffler End Plate	2
47. Name Plates	2*
48. Oil Cooler	4
49. Oil Filter	4
50. Oil Floats	2
51. Oil Measuring Stick	1
52. Oil Pump Fittings	2
53. Power Glide Parts	1
54. Power Steering Unit	1
55. Pulleys	1
56. Radiator Inlet	1
57. Radiator—Lower Cover	1
58. Rocker Arm Cover Plate	1
59. Sealed Beam Lamps	1
60. Shift Lever—Fordomatic	1
61. Spark Plugs	1
62. Starters	2
63. Steering Gear	1
64. Tappet Bearing Plate	1
65. Timing Gear Stamping	1
66. Tire Pump	2
67. Tractor Gear Rings	2
68. Trailer Window Frames	4
69. Transmission Parts	2
70. Truck Dynaflo Turbine Blades	1
71. Truck Signal Assembly	1
72. Truck Trailer Shank	1
73. Ultramatic Drive	3
74. Universal Coupling	2
75. Valve Tappets—Cast Iron	1
76. Window Molding	1

*Probably more joints per unit.

PALNUT LOCK NUTS
Trademark

Slash Fastening Costs!

PALNUT—WASHER TYPE

For moldings, nameplates, medallions, ornaments, tail and parking lights, instruments, etc.



SPACER TYPE. Large clearance spans bosses of die cast parts or other protruding elements. Eliminates cup washer, lock-washer and nut.



GROUNDING TYPE. Depressed teeth in washer base cut through non-conductive coatings to electrically ground assemblies on tail and front parking lights.



TYPE E. Machine screw sizes used on instruments, ammeters, electrical gauges and studs. Larger sizes for mounting air inlet and dash controls.

The PALNUT Washer Type is a spring steel lock nut and flat washer in one piece. Replaces two, three, sometimes four separate pieces of hardware. Especially adapted to high speed application with hand or power tools. Many types and sizes.



TYPE D. Available in variety of washer base diameters. Large washer base spans large slots — spring resiliency eliminates stud breakage and dimpling of body stock. Keeps parts tight in service.



SEALER TYPE. Has sealing compound at base to keep out dust and water. This one part replaces sealer washer, flat washer, lock washer and nut.





PALNUTS—Regular Type
Apply on top of ordinary nuts to keep nut and bolt absolutely tight under severest vibration, on connecting rods, brake parts, housings, structural parts, etc. On light assemblies, used alone as self-locking nut.



PALNUT—
Acorn Type
Used on glove compartments and wherever rough bolt ends must be covered.



PALNUT—Wing Type
Locks against vibration when finger tightened. Used on battery hold downs and air cleaners.

Write Detroit office for free samples and data

THE PALNUT COMPANY
60 Cordier St., Irvington 11, N. J.
Regional sales office:
726 West Eight Mile Road, Detroit 20, Mich. Tel. JOrdan 4-6087

an AIR engineering FIRST

New ANGLE WRENCH
with unmatched Torque Control

Ingersoll-Rand introduces a brand new concept in torque control in angle wrenches. This sensational new development shuts off automatically and completely—it does not continue to build up torque.

The New Torque Control Angle Wrench runs series after series of nuts or cap screws to the same tightness . . . eliminates the inaccuracies of former angle wrenches.

- **Easy Adjustment**—quickly and easily adjusted to produce any torque within the selected range.
- **More Durable**—than any previous angle type nut runner. New "valve type" torque control mechanism is less vulnerable to wear . . . more economical to maintain.
- **Minimum Torque Reaction**—transmitted to operator, regardless of torque setting . . . for the life of the tool.
- **Seven Sizes** — to choose from—torque range from 5 to 90 foot pounds.



size 38MT

Ask your Ingersoll-Rand AIRengineer to demonstrate the new I-R Torque Control Angle Wrench . . . phone him today . . . or write for more information on this new development.

8-188 **Ingersoll-Rand**

11 Broadway, New York 4, N.Y.





Planet apron conveyor moving through tunnel beneath trim presses.

THIS 1200 FT. PLANET CONVEYOR moves 20 tons of scrap per hour!

At a leading automobile plant . . . this Planet conveyor automatically handles the loose scrap from trim presses with a combined capacity of over 4,000 **tons.**
Over 20 **tons** of scrap per hour drop on a Planet hinged-pan apron conveyor as it moves through a tunnel under the presses. Moving to an automatic baler, the scrap is com pressed into 2' cubes. Then the baled scrap moves on a Planet pusher bar conveyor direct to the waiting railroad cars. A simple clutch-operated auxiliary drive assures continuity of operation.

Because baled scrap is worth more . . .
Because the entire operation is automatic . . .
Because this scrap-handling system saves time and labor . . .

• It PAID this manufacturer to "Plan with Planet." It will pay you too! Better write today!

PLANET CORPORATION
1822 SUNSET AVENUE
LANSING, MICHIGAN



- CONVEYORS
- ENGINEERED SYSTEMS
- FOUNDRY EQUIPMENT
- AUTOMATION
- STEEL FABRICATION

HUNDREDS OF RUBBER PARTS

Used in Each Modern Car

As can be seen from the list below, the number of rubber parts in automobiles continues to increase. The actual total number probably averages about 265 places in a modern passenger car. Rubber cement is used in approximately 535 locations.

Sway Eliminator Bushing & Cushions
Control Arm Pivot-Bar Dust Seals
Transmission Seals & Gaskets
Torsional Vibration Damper
Steering Collar Insulator
Radiator Hose
Fuel Line Hose
Heater Hose
Fan Belt
Body Insulators
Battery Cases
Heater Can Anti-Squeak Pad
Brake & Clutch Lining
Engine Front Mount
Control Arm Pin-Bushing Seals
Steering Knuckle Dust Seal
Hydraulic Brake Hose, Cups, Boots
Steering Gear Arm Bushing
Steering Post Bracket Insulator
Shock Absorber Bushings
Ignition Wiring
Spark Plug Covers
Steering Post Pads
Radiator Drain Tube
Master Cylinder Boot & Cup
Transmission & Engine Rear Mounts
Propeller Shaft Boots
Transmission Strut Bushing
Silent Block Bushing
Tail Pipe Insulator Support
Shock Absorber Seals
Pinion Shaft Seal
Fuel Tank Gage Seal
Wiper Hose
Antenna Gaskets
Windshield Wipers
Division Channel Weatherstrip
Window Channel Filler Seal
Parking Light Lens Gaskets
Water Pump & Seals
Engine Seals & Gaskets
Door Windlace Sponge-Covered
Bumper to Fender Spacer
Fresh Air Adapter Grommets
Battery Drain Tubes

(*Turn to page 522, please*)

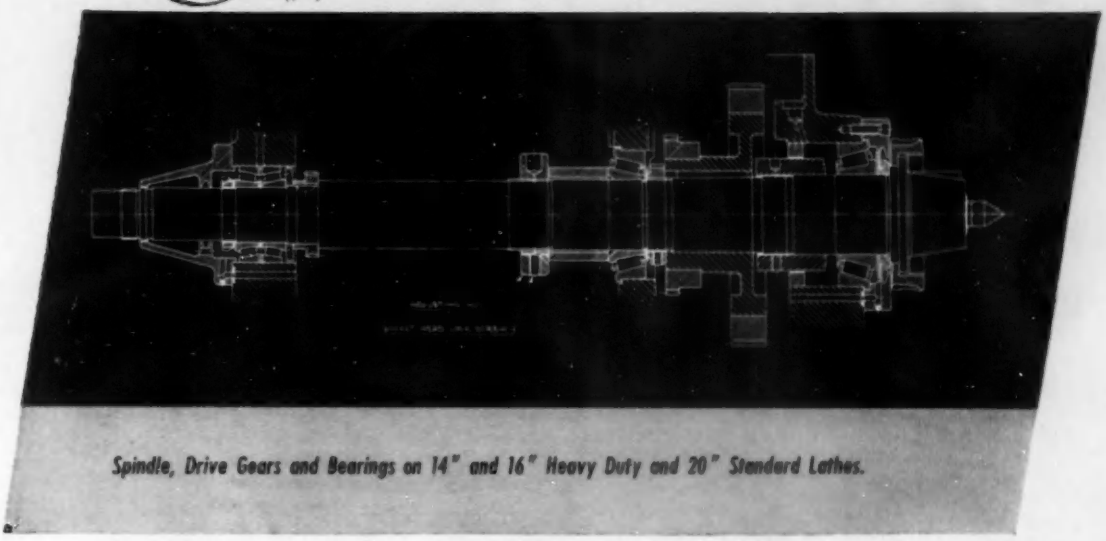
FOR A BETTER DRIVE

...Lodge & Shipley puts it

"ON THE NOSE"



... Locating drive gears and main bearings near spindle nose, drive gears rigidly keyed to spindle for maximum strength — power — accuracy.

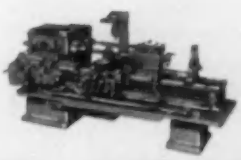


Spindle, Drive Gears and Bearings on 14" and 16" Heavy Duty and 20" Standard Lathes.

Location of driving force and bearings close to the load is a proven advantage in power transmission. Lodge & Shipley drive gears and main bearings are literally "on the nose," grouped at the forward end of the spindle just inside the headstock.

Giving extra ruggedness and power, this detail is an example of the design skill that goes into every part of the Lodge & Shipley Lathe. The result, proved by thousands of users, is a lathe that gives more in production and accuracy—costs less in operation.

For your next lathe, consider a Lodge & Shipley. A representative will welcome the chance to compare a Lodge & Shipley . . . point by point . . . with any other lathe. Request Bulletin No. 200 which describes and explains the many features. The Lodge & Shipley Co., 3055 Colerain Ave., Cincinnati 25, Ohio.



Lodge & Shipley

....your **LODGE**-*ical choice!*

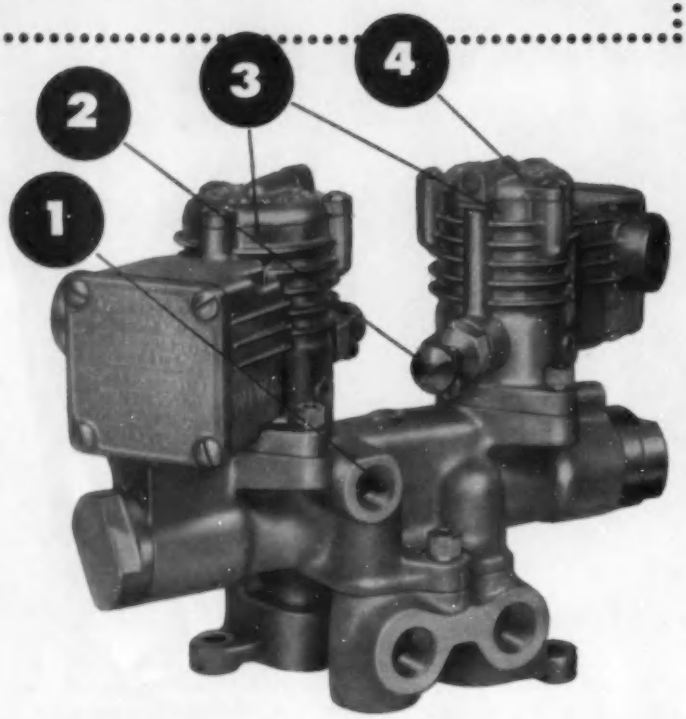
Automation Minded?

SPEED KING

CONTROL VALVE with DOUBLE SOLENOID

performs through millions of cycles without danger of breakdown or coil burn-out

DESIGNED AND BUILT TO J. I. C. STANDARDS



1. EXTERNAL PILOT CONTROL
(standard feature for optional use)

2. MANUAL OVER-RIDE (optional feature)
enables operation of valve without current

3. INTEGRAL JUNCTION BOX
(optional feature)
totally enclosed with removable cover

4. PLASTIC MOLDED COIL
prevents short circuiting

Valvair
991 BEARDSLEY AVENUE
AKRON 11, OHIO
Affiliate: Sinclair-Collins Valve Co.

Representation in: Baltimore • Birmingham • Boston • Buffalo • Charleston, W. Va. Chicago • Cleveland • Cranford, N. J. • Dayton • Denver • Detroit • Eureka, Calif. Houston • Kansas City, Mo. • Logansport, Ind. • Louisville • Minneapolis • S. Pasadena Philadelphia • Pittsburgh • Portland • St. Louis • Seattle • San Francisco • Syracuse Montreal • Toronto • Vancouver

(Continued from page 520)

Gas Tank Shim
Gearshift Lever Arm Bushing
Replacement Tires & Tubes
Frame & Axle Bumpers
Spring Shackle Bushings
Tail Pipe Insulators
Speedometer Cable Housing
Spring Silencers
Cowl Vent Weatherstrip with Applied Skin
Fender & Engine Compartment Dust Shield
Steering Wheel Spoke Ornament Cushion
Instrument Panel Anti Squeaks, Wiring Grommets
Windshield Wiper Pivot Pad & Bracket Grommet
Rear Window & Vent Window Weatherstrips
Front Door Ventwing Weatherstrip
Door Weatherstrip Front & Rear
Horn Ring Ornament Cushion
Dash Liner & Cowl Trim Pads
Door Check Arm Bumpers
Gas Tank Filler Neck Hose
Stone Deflector Bumper
Door Inside Locking Knob
Sound Deadener Insulation
Door Hinge Post Pillar Bumper
Tubeless Tires
Oil Line Hose
Oil Gage Hose
Wiring Clips
Body Shims
Headlight Lens Gaskets
Radiator to Hood Seals
Tail & Stop Lamp Lens Pads
Radiator Seals
Hood Lacing
Fender Seals
Hood Bumpers
Bumper Grommet
Wheelhouse Weatherstrip
Crash Pad
Glove Box Door Bumpers
Windshield Weatherstrip
Gas Tank Filler Neck Grommet
Door Glass Runs Front & Rear
Sill Mats & Attaching Grommets
Rear Deck Opening Weatherstrip
Floor Mats, Toe Riser & Trim
Foam Rubber Seat Cushions
Hood & Door Lock Seals
Defroster Hose
Door Bumpers

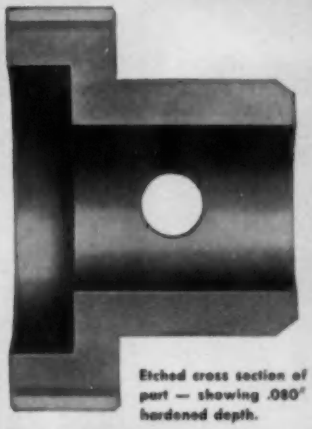
AUTOMOTIVE INDUSTRIES . . .

is your News Magazine of Automotive and Aviation

MANUFACTURING

COSTS CUT 94%





Etched cross section of part — showing .080" hardened depth.

with TOCCO* Induction Heating

A cost reduction of 94% resulted when heat-treatment of this Corn Harvester part was changed from carburizing to TOCCO-hardening. Look at the unit cost breakdown:

CARBURIZING		TOCCO-Hardening	
Degrease	$0.0020	*eliminated*	
Carburize	0.0200	*eliminated*	
1st quench	0.0150	TOCCO, heat and quench	$0.0060
2nd quench	0.0150	*eliminated*	
Draw	0.0050	*eliminated (self-draw)*	
Shotblast	0.0035	*eliminated*	
Internal Grind	0.0243	*eliminated*	
External Grind	0.0166	*eliminated*	
	$0.1014		$0.0060

"—Savings of 9½ cents per piece—$4770.00 on each 50,000 piece batch, *plus* an hourly production increase from 120 to 300 pieces per hour, *plus* improved quality of the product by virtue of the deeper case and stronger core."

Have you investigated TOCCO's cost-savings possibilities for your hardening, brazing, melting or forging operations? Why not write us today or send blueprints of your parts —no obligation, of course.

THE OHIO CRANKSHAFT COMPANY



TOCCO

*Trade Mark Reg. U. S. Pat. Off.

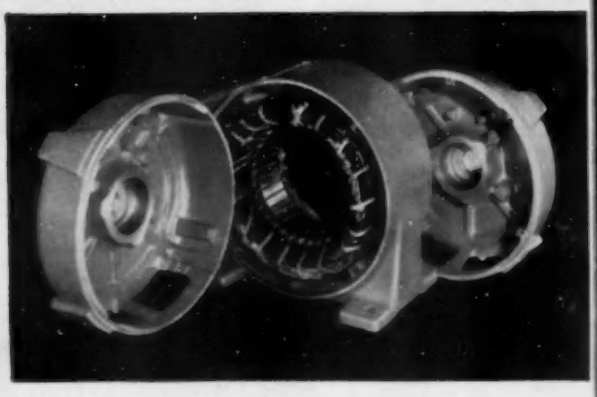
Mail Coupon Today

NEW **FREE** BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. H-3, Cleveland 1, Ohio
Please send copy of "TOCCO Induction Heating."

Name_____
Position_____
Company_____
Address_____
City_____ Zone___ State_____

MOTOR FACTS ON INDUSTRY'S
MOST-PREFERRED "POWER PACKAGE."



Electrical System Fact: New fortified insulation includes exclusive Bondar, Bondite and Mylar* for greater protection against the toughest operating conditions.

*Du Pont registered trade-mark

FACT:

The new Life-Line A has stronger insulation than any other motor on the market

Meaning what? Simply that the new Westinghouse Life-Line® "A" motor with new fortified insulation can withstand heavier overloads and operate at higher temperatures than any other motor you can buy.

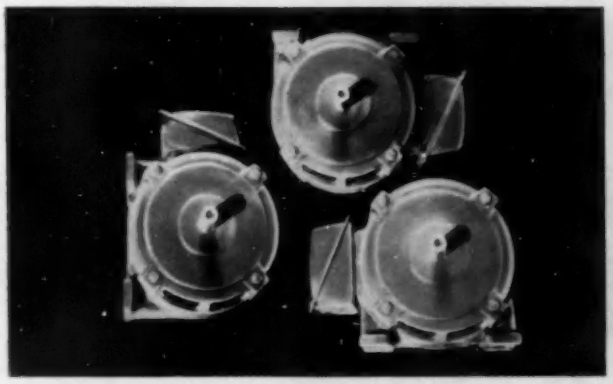
Similar design advances in the mechanical and lubrication systems make Life-Line "A" industry's most preferred motor.

It takes the right combination of *all three systems*—electrical, mechanical and lubrication—to build the best package of power on the market.

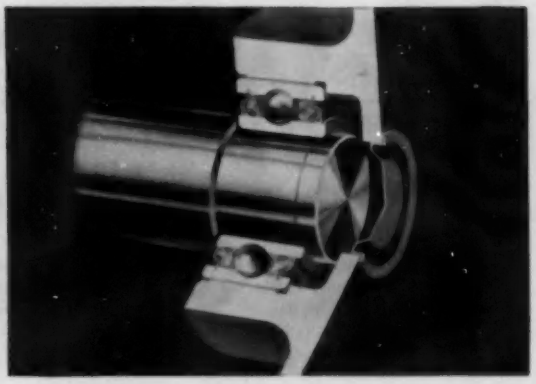
Get all the facts by calling your Westinghouse sales engineer . . .
The Man With The Facts!

J-21877

YOU CAN BE SURE...IF IT'S
Westinghouse



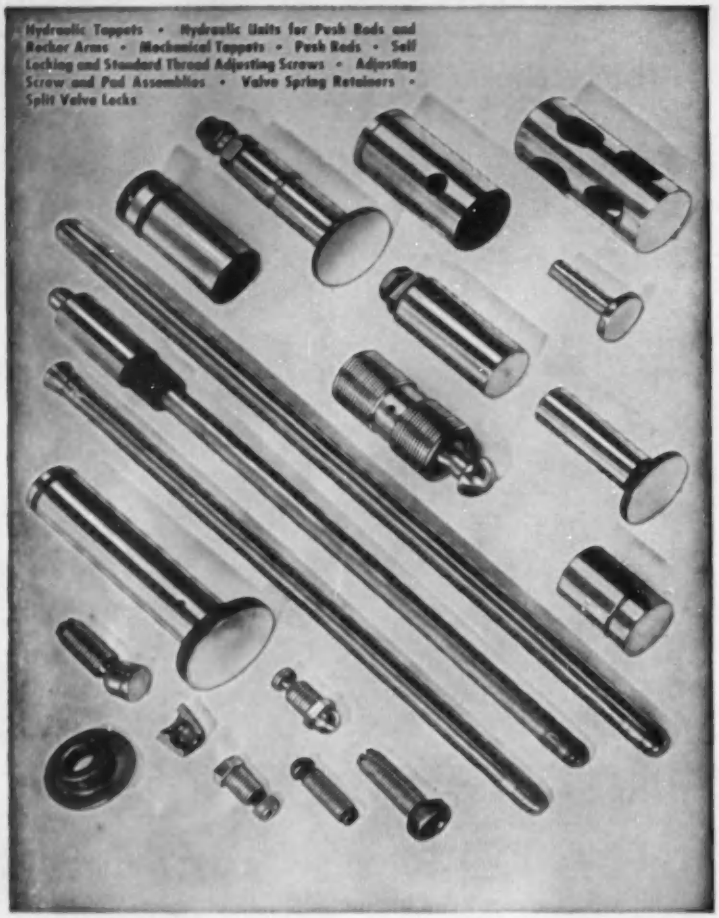
Mechanical System Fact: New cast-iron housing on both drip-proof and totally-enclosed types. Ventilation openings only in end brackets make the motor drip-proof whether mounted on floor, ceiling or wall.



Lubrication System Fact: New "4-way sealed", pre-lubricated bearing eliminates completely the 3 main causes of bearing failure: 1) contamination, 2) over greasing, 3) wrong grease.

"CHICAGO"
precision valve gear parts

●STEEL ●CAST IRON ●STEEL and IRON



Connecting Rod Bolts.....Hydraulic Cylinder Pistons
Cylinder Head Studs.....Cylinder Head Cap Screws
Main Bearing Studs.....Main Bearing Cap Screws
Flywheel to Crankshaft Screws.....Diesel Energy Cells
Wheel Bolts and Studs.....Differential Carrier Screws
Oil Pump to Distributor Shafts.....Rocker Arm Shafts
Automatic Transmission Valves.....Water Pump Shafts
Roller Followers.....Ball Joint Assemblies

External and Internal Grinding, Thread Grinding, Precision Roll Threading

Heat Treating • Carbon Restoration • Carburizing • Carbo Nitriding • Cyaniding • Hydrogen Brazing • Complete Metallurgical, Dynamometer and Testing Laboratories

Special Screw Machine Parts 1/16" to 5" Diameter • Cold Upset 1/16" to 1" Diameter • Cap Screws • Set Screws • Nuts • Studs • Taper Pins • Socket Screw Products

The CHICAGO SCREW COMPANY
2801 WASHINGTON BLVD.,
BELLWOOD, ILLINOIS
Established 1872

MACHINING HEAVY METAL

CONTRARY to many opinions, Hevimet, the high density, high tensile strength alloy of tungsten, nickel and copper, can be readily machined, drilled and ground, according to engineers of Carboloy Department of General Electric Co.

Hevimet is used extensively as a weight and in radio-active shielding. It is approximately 1.5 times as heavy as lead. Its machining characteristics are similar to those of cast iron, and the same precautions are taken with Hevimet as with cast iron, Carboloy engineers report. They point out that machining techniques include lower feeds and greater side or peripheral cutting edge angles. In drilling, however, a sharper cone angle can be employed. The metal has a machinability rating of about 75 per cent.

Here are Carboloy engineers' machining suggestions: For turning, boring and facing with carbide, use grade 883 (or 44A).

Tool shape:
0° back rake
6° side rake
7° end clearance
7° side clearance
8° end cutting edge angle
15° side cutting edge angle

Coolant: dry
Feed: 0.004-.008 ipr for finishing
0.008-.016 ipr for roughing
Speed: 300 sfpm for finishing
170 sfpm for roughing
Depth of Cut: 0.050-0.250 in.

For milling and shaping use carbide grade 44A (or 883).

Tool shape:
10° axial rake
10° neg. radial rake
7° face relief
7° peripheral relief
6° face cutting edge angle
45° peripheral cutting edge angle

Coolant: dry
Feed: 0.004 in. per tooth-finishing
0.008 in. per tooth-roughing
Speed: 250 fpm—finishing
150 fpm—roughing

In grinding, the best results are obtained by using a medium hard aluminum oxide grit with medium grain and spacing and a vitrified bond. Be sure to use conventional grinding practices.

For drilling use carbide grade 883 or high speed steel.

Coolant: Sulphurized oil or dry
Feed: 0.010 ipr for HSS
0.005 ipr for 883
Speed: 50 fpm for HSS
300 fpm for 883

In tapping, a high speed steel tool material should be used at a speed of 60 fpm with sulphurized oil as the coolant.

Carboloy grade 883 carbide should

EXTRA RUGGED... SPEEDY... ACCURATE...

to Bring Down Milling Costs!



No. 1-14
32" x 9" table ... 14" table travel ... hydraulic table feed ... full automatic cycle.

No. 2-20
20" table travel... 42" x 12" table.. fully automatic hydraulic table feed.

No. 1-14DS
Double Spindle for two milling operations at same time ... 14" table travel ... 32" x 9" table.

No. 2-20DS
Double Spindle for two milling operations at same time... 20" table travel ... 42" x 12" table.

No. 2-20V
20" table travel... vertical spindle with speed range 32 to 1284 R.P.M. ... 42" x 12" table.

No. 1-V
Hydraulic vertical head feed ... 5½" head travel ... 25" x 9" table.

No. 1-M
Hand feed to table and head ...25" x 9" table ... Adjustable head counterbalance.

No. 1-8
8" table travel... 25" x 9" table... automatic hydraulic table feed.

STEP UP SPEED and ACCURACY!

Put the work on Kent-Owens Machines for top-speed milling and topmost accuracy to keep your costs at a minimum! Advanced features throughout these rugged machines make the difference . . . greater dependability . . . accuracy maintained in meeting tough production schedules. Twin-post head mounting assures balanced load. Greater cutting efficiency—only two gear contacts, motor to spindle. Write for bulletin #754 on wide range of hydraulic and hand-operated machines. Also, let Kent-Owens design and build your tooling and special machines. Kent-Owens Machine Co., Toledo, O.

KENT-OWENS
for milling machines

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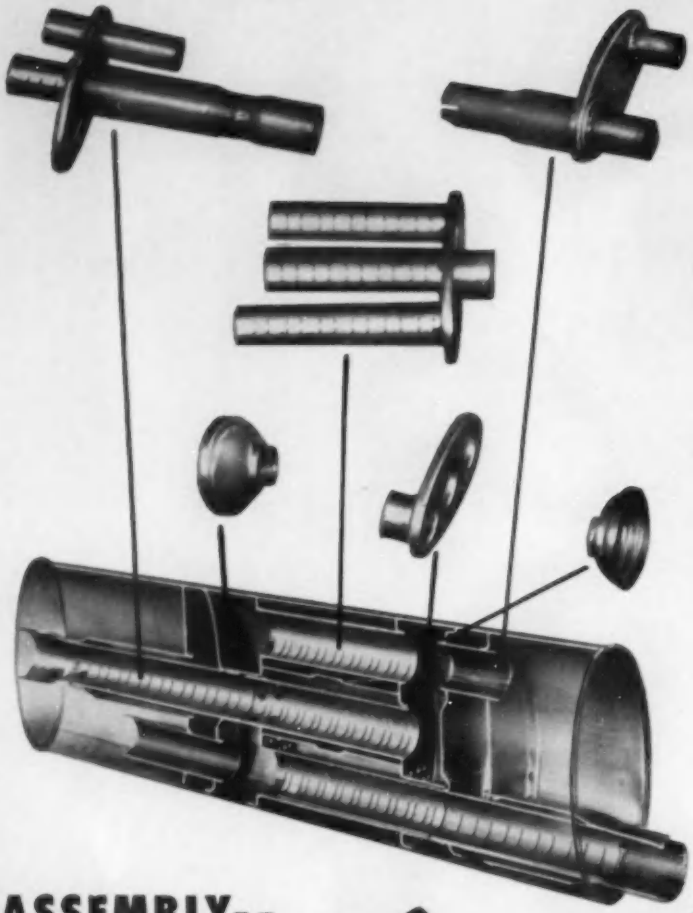
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WELDING TIME 6 SECONDS!

Six individual baffle assemblies are inserted into muffler shell, accurately positioned and securely welded. Total elapsed time for completed job is an amazing six seconds.

In this short interval 96 spot welds are made — 16 welds each to the six baffle assemblies.

This Federal welder replaced several individual spot welders, eliminated a great amount of handling and boosted production by some 200 per cent.

It's the type of thing Federal engineers have been doing consistently for some of America's leading fabricators. Why not talk over your welding operation with a Federal man. There's no obligation and chances are he can show you how to reduce your production costs. It's the big reason why **Federal stays — "First in Resistance Welding."**

Federal WELDERS
Warco PRESSES

THE FEDERAL MACHINE and WELDER COMPANY
WARREN, OHIO

be used in reaming, either dry or with a sulphurized oil coolant.

Conventional practices can be used in knurling.

Industry News

(*Continued from page* 508)

Italian Automotive Industry Attained New Peaks in 1954

In order to appreciate the meaning and importance of the results attained by the Italian automotive industry in 1954, it is opportune to consider the recent past. Before WW II, the highest output was attained in 1937 with 77,708 motor vehicles (61,366 cars and 16,342 commercial vehicles).

A tendency to produce more commercial vehicles than cars developed as a direct consequence of the war since the year 1940, when 25,604 commercial vehicles were built, as against 22,252 cars. This tendency lasted also during the period that immediately followed the war.

Since 1947, cars have had the upper hand, and have steadily maintained their position in the successive years. Automotive output has shown a vigorous expansion with a production of about 215,000 motor vehicles in 1954.

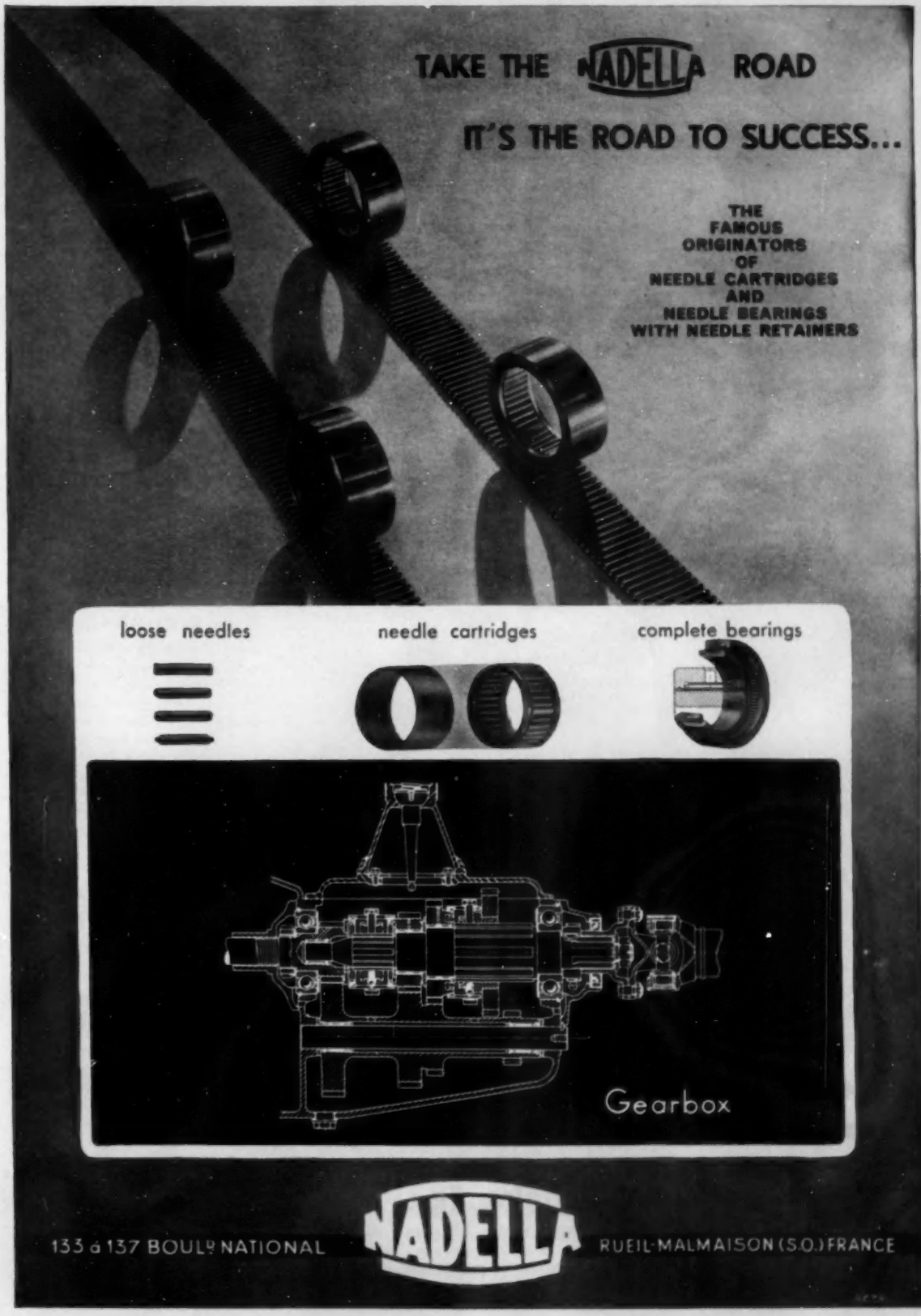
Prospects for the immediate future of the Italian automotive industry are favorable. As it is universally known, a new mass-produced four-seater will be put on the market this spring at a price within reach of a large number of customers and should prevent any danger of market saturation.

Another important factor in favor of a continued expansion is the economic improvement registered in the meridional regions of Italy where the number of motor vehicles is still exceptionally low. A higher standard of living will undoubtedly exert a strong influence on the growth of motor vehicle production and sales.

Not to be overlooked is the importance of exports. In 1954, Italy exported about 43,000 motor vehicles, or 20 per cent of the total output. This relatively high level was attained after starting from zero in 1945.

The creation of new models undoubtedly will continue to facilitate Italian sales abroad. In 1954, for example, exports increased substantially, due to this factor. New 1955 models should likewise aid immeasurably in increasing Italian automobile exports in the immediate future.

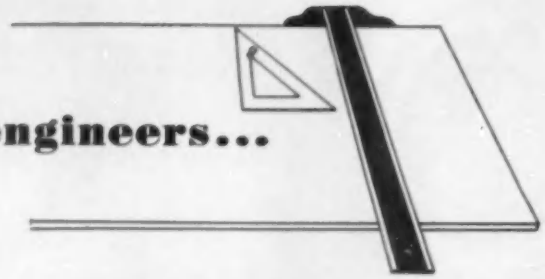
(*Turn to page* 530, *please*)


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IT'S THE ROAD TO SUCCESS...
THE FAMOUS ORIGINATORS OF NEEDLE CARTRIDGES AND NEEDLE BEARINGS WITH NEEDLE RETAINERS
loose needles
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Industry News

(*Continued from page* 528)

Houdaille-Hershey May Buy Frontier Industries, Inc.

The expected purchase of Frontier Industries, Inc., Buffalo, N. Y., by Houdaille-Hershey Corp. of Detroit, Mich., is regarded as a symbolic move by the company in its diversification program. It would enable the latter to expand its facilities substantially and give it a wider range of products from hand tools to the manufacture of stone for roads.

Still subject to approval by stockholders of both companies, the purchase will give Houdaille-Hershey at least four plants operated by Frontier. These include, in addition to the Buffalo Div., a wholly-owned subsidiary at Akron, N. Y., which is producing defense weapons; Fairmount Tool & Forging, Inc., Cleveland, O., producer of custom forgings and hand tools; and Buffalo Crushed Stone Corp., Bowmansville, N. Y.

Air Conditioning Offered In Kit By Chrysler Corp.

Chrysler Corp. is now offering a package of all necessary components for field installation of its air conditioning unit. Chrysler Div. announced the availability of the system for its dealers last year, but now the special kit has been extended to the Dodge V-8 and De Soto lines of cars previously available factory-installed only. The unit will sell for $567, same price as the factory charges for installing it.

S-P President Named Fifth Head of AMA

James J. Nance, president of Studebaker-Packard Corp., last month became the fifth president of the Automobile Manufacturers Association and the second Packard executive to hold that post since the organization was established in 1913. Formerly a treasurer of AMA, Mr. Nance succeeds the late George W. Mason, president of American Motors Corp., who presided over AMA for nine years.

George W. Romney, president of American Motors Corp., succeeds Mr. Nance as AMA treasurer. Three new directors elected were: L. L. Colbert, president, Chrysler Corp.; P. O. Peterson, president, Mack Mfg. Corp.; and J. L. Brown, vice-president, American Motors Corp.

(*Turn to page* 532, *please*)

FOR TODAY'S *Push Button* CONVENIENCES—

AMERICAN BOSCH
SMALL ELECTRIC MOTORS



to power—

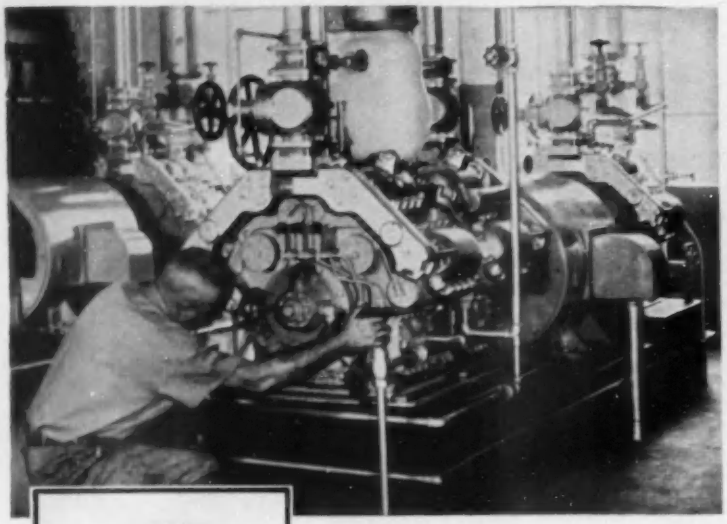
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MODEL L—Mechanically sealed pumps. Ask for Catalog 101



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As the leader in pumps for pressure lubrication service, Tuthill offers a complete line of rotary, internal-gear, positive displacement pumps to take care of any possible application. The Tuthill line includes models for standard requirements, automatic reversing types and stripped pumps for built-in applications. To make it easy for you to select the pump best-suited to your needs, Tuthill catalogs are available covering each series of pumps, as listed below.

Write for the Catalog that fits your application

Ask for Catalog 101 on Model L series if your needs call for ⅛ to 6 g.p.m. at pressures to 600 p.s.i.

Ask for Catalog 102 on Model C series if your needs call for 2 to 200 g.p.m. at pressures to 100 p.s.i.

—Ask for Catalog 105 on Model R (automatic reversing) series—from ¾ to 200 g.p.m. at pressures to 400 p.s.i.

Ask for Catalog 106 on Models S and SA stripped pumps for built-in applications —from ⅛ to 200 g.p.m. at pressures to 200 p.s.i.

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Dependable Rotary Pumps since 1927

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Industry News

(*Continued from page* 530)

Army Vehicle Standardization Program Forges Ahead Rapidly

As evidenced by a recent demonstration at the Detroit Arsenal, the Army's standardization program for military vehicles is progressing at a fast pace. While the demonstration centered primarily on tanks, great strides have also been made in the interchangeability of components and parts for trucks and other automotive equipment.

For example, Army Ordnance has developed one type of lighting switch and tail lamp which fits all standard vehicles from Jeeps to tanks. By the same token, the standardization program has resulted in the reduction of the number of generators for all vehicles from 266 during WW II to seven; voltage regulators from 260 to 15; automotive starters from 63 to eight; engine parts for all vehicles from 36,550 to 8500; tank transmissions from 48 to 13; and fuel and lubricant items for all tank-automotive vehicles from 50 to 20. It is also worthy to note that now two tank engines (500-hp and 375-hp units) are used for 13 different tanks, compared with five different engines used in just one type of tank back in 1944.

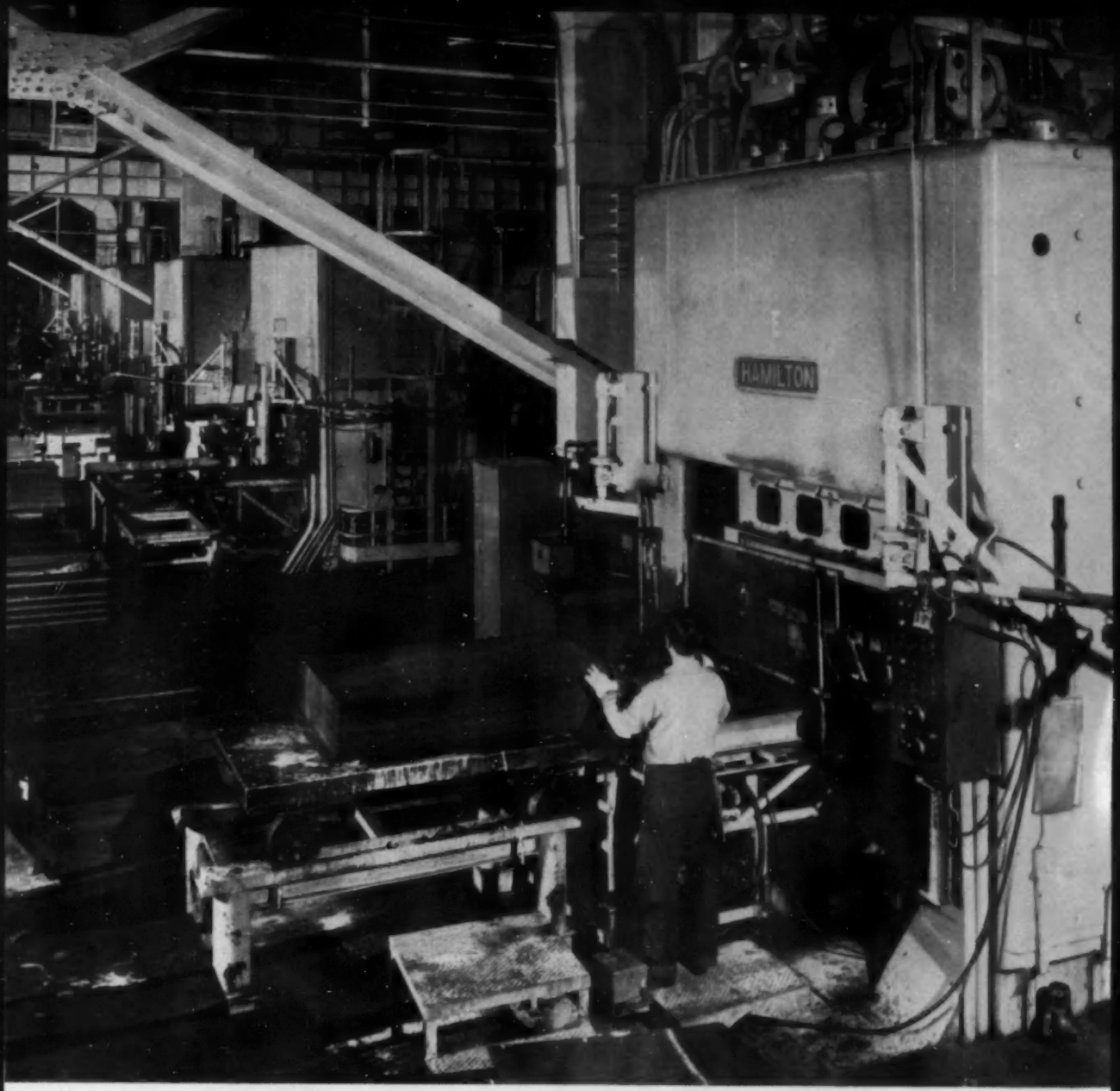
While total dollar savings which have accrued from the standardization program are difficult to estimate, they are known to be appreciable. For example, savings on air cleaners alone are said to have totaled $750,000 by merely redesigning a bracket so that one type of unit could be used on many vehicles.

Four Mobile Electric Sets Added To Caterpillar Line

Announcement of four new portable electrical generating units by Caterpillar Tractor Co. brings to 10 the number of such sets the company is now offering. The new trailer-mounted units have been designated as the D397, D386, D375 and D364. Power ranges from 155 kw to 300 kw.

Each unit is available with a 60-cycle, three-phase generator operating at 1200 rpm, or a 50-cycle, three-phase generator operating at 100 rpm. A standard package of all the necessary accessories, such as cables, safety shutoffs and fuel tank, is included with each set. The trailer on which the set is mounted is approximately 25 ft long, eight ft wide and 12½ ft high with tandem axles.

(*Turn to page* 534, *please*)



EVIDENCE OF LEADERSHIP—Hamilton presses head each of these lines in a typical modern auto-body stamping plant. In most other major plants in this industry you can see similar evidence of Hamilton's 30-year leadership in design, quality and performance. *Hamilton Press Division, 425 Curtis Building, Detroit 2, Mich. Branch Offices: New York and Chicago; Factory: Hamilton, Ohio.*

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- Straight or angle cutting
- With or without vise
- Built-in Coolant System
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LOBDELL UNITED DIVISION

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UNITED ENGINEERING AND FOUNDRY COMPANY

Industry News

(*Continued from page* 532)

Car Makers Spent $4.6 Billion On Modernization In Five Years

Expansions in productive capacity during the last five years have placed the automobile industry in the strongest position in its history. Manufacturers are ready to take full advantage of an expanding market which is seen as headed for new heights.

Although the peak in plant expansions may have already passed, the end is not yet in sight, according to the Automobile Manufacturers Association. AMA notes that, during the past five years, car makers have poured out $4.6 billion into expansion and modernization programs, topped by a record $1.35 billion last year.

Yearly expenditures by automobile manufacturers, according to AMA figures, were: $510 million in 1950; $851 million in 1951; $896 million in 1952; $1 billion in 1953; and $1.35 billion in 1954. AMA notes that several additional millions have been committed for 1955.

AC Aircraft Plug Tester Available to Industry

Developed by AC Spark Plug Div., an instrument used by the Air Force for testing aircraft spark plugs is now being offered for commercial use. Made to test insulators of both jet igniter and reciprocating engine plugs, the device is said to detect cracks, flaws, and determine whether an insulator will withstand an electrical potential in excess of 20,000 volts without rupturing or breaking.

A special feature of the tester claimed by AC is an oil quench. This is said to prevent high voltage discharge across the gap and to reveal any imperfections of the insulator tip.

Mexican Car Imports Down In 1954 from 1953 Period

Imports of private passenger cars by Mexicans showed a sharp decrease last year. During the period from January through November inclusive, imports totaled 11,488 automobiles, valued at $8.872 million.

This figure compares with the 24,576 cars imported in the same period of 1953, valued at $24.189 million. The 1954 reduction in imports is said to have been due to the high duties ordered by the Mexican Government.

(*Turn to page* 539, *please*)



Here's the sure way to get the truck heater that's

RIGHT FOR THE JOB!

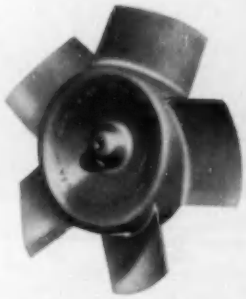
Before you specify *any* heater for your new truck models, be sure it's designed to deliver the BTU's needed to do the job *right*. A custom-built Evans heater will do the job *right* because it's designed to meet these special heating and engineering requirements of *your* trucks: size and design of cab . . . glass area . . . amount, type and placement of insulation and all other related factors.

Evans heater components, such as heavy duty motors, one piece die-cast aluminum fans and sturdy fin and tube type cores are perfectly balanced in design for *extra* performance and *longer* life. What's more, an Evans heater offers low-cost maintenance and easier service because it's built to fit your truck.

Each Evans heater has a part 4303-84 or replace warranty for one year or 5,000 miles, whichever occurs first.

You'll benefit, especially in that important stage of designing a new model, by calling in Evans' engineers to work hand in hand with you. They'll design the right heater for *your* job, build the prototypes and test them to your complete satisfaction.

For free copy of new catalog, write: Evans Products Company, Dept. P-3, Plymouth, Michigan.



This is the exclusive, one-piece EVANAIR fan

. . . never loses its shape or balance. Precision die-molded in one piece, of aluminum alloy. Doesn't chip, crack or bend, has no parts to work loose. It's light . . . less than half the weight of ordinary fans, yet delivers more air with less vibration and motor wear!

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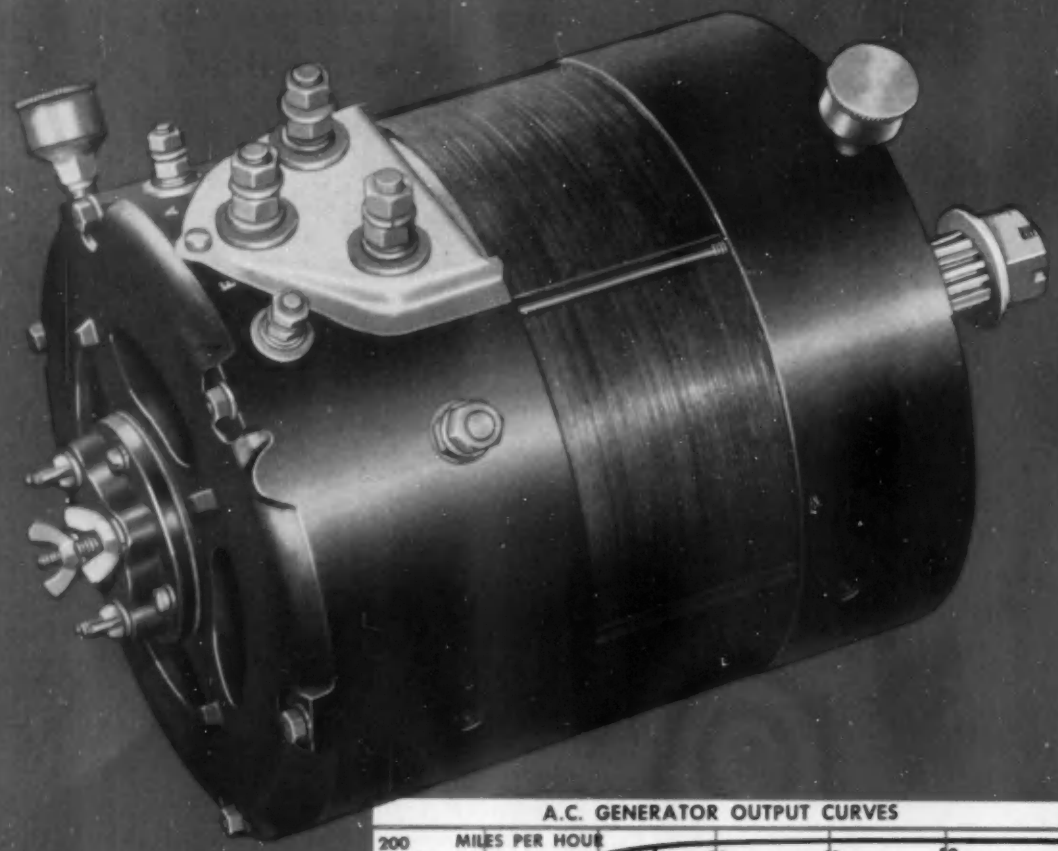
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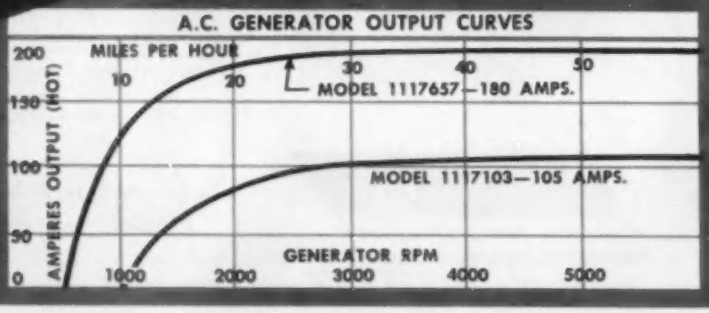
Progressive Engineering

A.C. GENERATOR PERFORMANCE DATA

Model	Volts	Cut-In RPM*	Curb Idle Amperes*	Maximum Amperes	Power Watts	Recommended For
1117103	12	975	6	105	1260	All speeds.
1117657	12	625	100	180	2160	All speeds.
1117062-3-4	6	750	30-40	90	540	All speeds.

*APPROXIMATE (BASED ON 100 GENERATOR RPM/MPH)





Makes the Difference

DELCO-REMY'S NEW THUNDERVOLT A.C. GENERATORS ANSWER THE WIDE VARIETY OF NEEDS IN HEAVY-DUTY APPLICATIONS

The electric power demands of modern buses, fire trucks and similar vehicles are heavy, continuous, and varied —ranging from alternating current for fluorescent lighting to direct current for other electrical equipment. The supply problem is further complicated by long and frequent periods of engine idling. But here's the answer to these problems—Delco-Remy's ThunderVolt-6 and -12 A.C. generators, designed specifically for vehicles with extra-heavy electrical loads.

The features of these new generators are many and impressive. Performance-wise, their characteristics include cut-in at low generator rpm, maximum output at low speeds, and the ability to operate at maximum efficiency over a wide speed range. Structurally, they are extremely low in weight in proportion to their tremendous output.

These new special-purpose generators are another example of Delco-Remy leadership in the automotive electrical field. Specify Delco-Remy electrical equipment for your new heavy-duty vehicles.

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Delco-Remy
ThunderVolt
ELECTRICAL SYSTEMS

DELCO-REMY • DIVISION OF GENERAL MOTORS • ANDERSON, INDIANA



Pioneers in Development of Vibration-Resistant Electrical Connector

The unsatisfied demand for a rugged, dependable connector capable of meeting the exacting requirements of modern aircraft led the Scintilla Division of Bendix* to develop the *first* vibration-resistant electrical connector. These connectors using the revolutionary new insert material known as Scinflex were first used on Scintilla Division's ignition equipment for piston engines.

So outstanding was the performance of this new and better connector that its acceptance and use have now become world-wide. Today the Scintilla Division is a major contributor to the electrical connector industry.

This pioneering has never stopped. Bendix was first in the field with cadmium plated connectors, which were later made a requirement of military specifications. Our latest contribution is the best engineered closed entry socket contact available anywhere—one which cannot be mechanically overstressed.

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New From Lindberg-Fisher

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These furnaces eliminate localized heating of metal, eliminate gas absorption, because there are no products of combustion present. Higher production results, due to less operator fatigue. Exhaust fumes and smoke are nonexistent and radiation loss is held to an absolute minimum by use of high quality insulation.

Longer crucible or pot service and low furnace maintenance are obtained with the patented long life, low voltage elements.

Can also be used as a holding furnace on die casting applications.

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Industry News

(*Continued from page* 534)

AMA Doubles Grant For Smog Research

The automobile industry's concern over the smog problem in Los Angeles is further pointed up in an announcement that the Automobile Manufacturers Association is making another contribution to the Los Angeles Air Pollution Foundation, the second such grant it has made within the last year. In addition to doubling its own research, the automobile industry will donate $100,000 to the organization.

At least 21 separate research projects are currently underway investigating the Los Angeles smog problem. Car manufacturers are spending approximately one million dollars on their own smog research programs. Their primary concern is to find out whether unburned hydrocarbons contribute to the smog which has plagued some West Coast areas.

Evaluation Data Disclosed On Marbon Cycolac Plastic

At a recent joint meeting of the Chicago Chapter of the Society of Plastics Engineers and the Society of the Plastics Industry, Howard H. Irvin, chief chemist of the Marbon Chemical Div. of Borg-Warner Corp. discussed evaluation data which Marbon has accumulated on its Cycolac high-impact plastic.

According to Mr. Irvin, Cycolac has been found to have an unusually low gravity, a good strength-weight ratio, and a high elongation. Among other notable characteristics of the plastic, he said, are: good impact strength, electrical properties, processing qualities, surface hardness, and tensile strength.

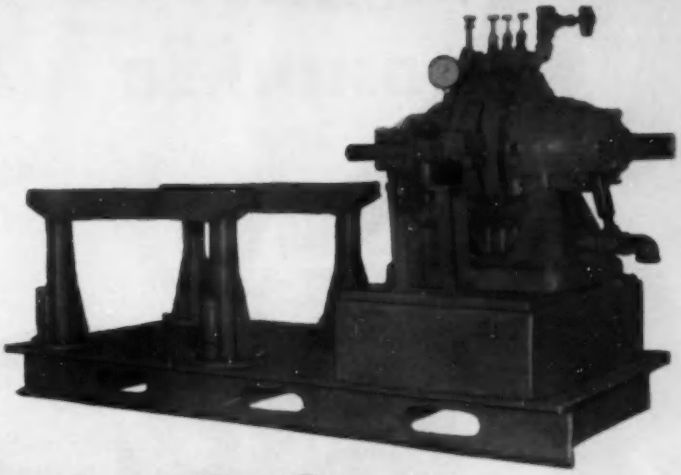
Mich. Engineering Society Annual Convention in April

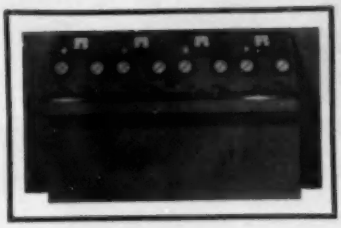
The 75th Annual Convention of the Michigan Engineering Society, sponsored by the Oakland County Engineering Society, will be held April 1 and 2. Headquarters will be at The Cranbrook School, Bloomfield Hills, Mich.

Technical papers on topics of current interest will be presented. An inspection tour of the vast Technical Center of General Motors Corp. will be a highlight of the program.

(*Turn to page* 540, *please*)

HI-EFF TAYLOR DYNAMOMETERS





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Electric and Hydraulic Dynamometers—Write for Bulletin 761

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"I recommend genuine Leather because it saves money for my customers."

Mr. J. R. Beane
Vice President and General Manager
Merlin Motor Company
Camden, N. J.

"The people who buy Lincolns aren't fooled by glitter. They want to be darned sure they get the most for their money. Genuine leather upholstery gives them their answer—it outwears any other upholstery material by far, and saves the expense of dry-cleaning and seat covers. On top of that it gets them a better allowance at trade-in time."

Tests by a famous impartial laboratory prove that Mr. Beane is right. They also prove that genuine leather upholstery holds its shape better by 37%.

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Only genuine leather wears as well as it looks.

YOU CAN GET THE FACTS THAT PROVE LEATHER IS BEST. Send the coupon today for "Review of Tests" (free), showing results of tests by a famous impartial testing company.

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Please send me, free, your "Review of Tests".

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Industry News

(*Continued from page* 539)

Jet Deflection Provides Vertical Boost for Plane

Additional vertical lift for a British Gloster Meteor fighter has been achieved by fitting the two Rolls-Royce Nene engines with deflectors which divert the propulsive stream 60 deg downwards. These are located midway along the jet pipes so that the thrust passes through the aircraft's center of gravity.

When 60 per cent of the available thrust is directed downwards, it is stated that the approach and stalling speed is reduced by as much as one-fifth. Advantages claimed for this system are: ability to take-off and land on shorter runways; change a descent into a climb rapidly if necessary; and the possibility of building a smaller aircraft for a given all-up weight.

No design details of this development have been released. Tests are being continued by the Royal Aircraft Establishment at Farnborough, England.

Chrysler To Step Up West Coast Buying

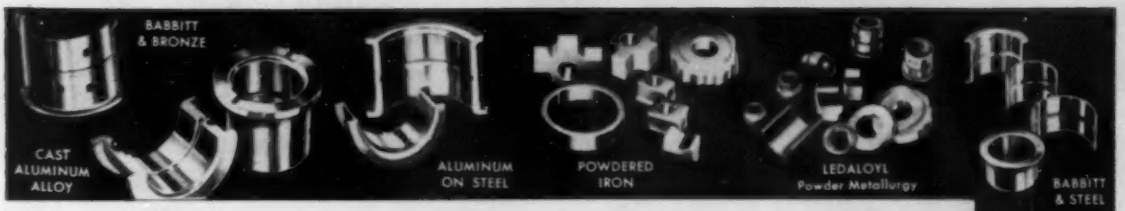
Chrysler Corp. reportedly will increase its purchasing on the West Coast, if it can get quality products at competitive prices. The company spent over $10 million last year in new equipment and improvements on its Los Angeles assembly plant. Now that its increased capacity is in full operation, Chrysler wants to buy more parts and components close to the plant.

High Cost of Plant Safety Is Cited by Ford Motor Co.

A good example of the amount industry spends to safeguard its workers from accidents while on the job can be found at Ford Motor Co. The company annually spends more than $5 million for protective clothing and equipment alone, and several million more to "build safety" into its plants.

As an example of the latter, Ford earmarked 15 per cent of its construction budget at its Cleveland, O., foundry for a ventilating system to keep work areas free of dust, smoke and fumes. Additional thousands are spent to maintain a full-time safety staff of 135 persons.

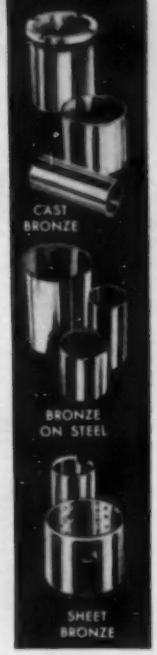
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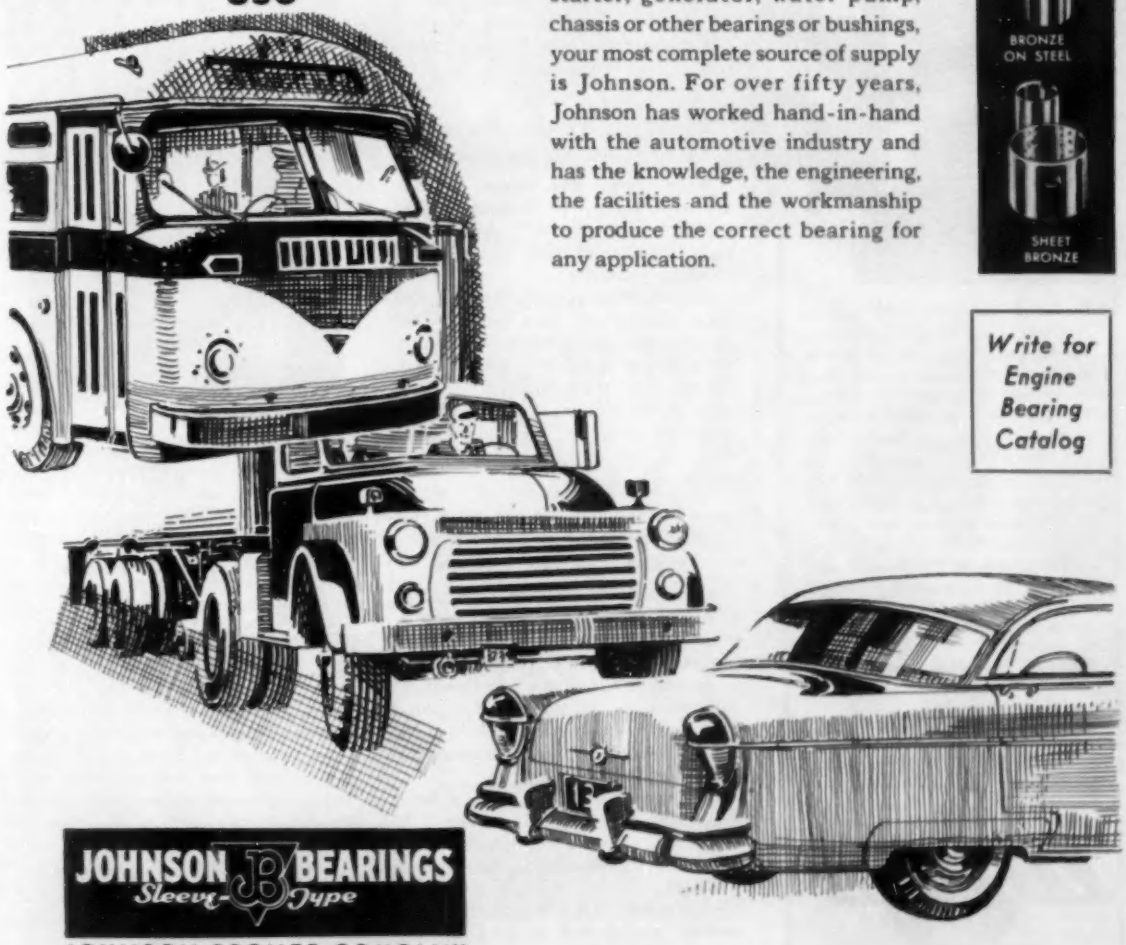
JOHNSON BEARINGS

Distinct types meet every automotive use

Every one of these nine types of Johnson Bearings has a specific application in today's cars, trucks, tractors and buses. Whether the need be for automatic transmission, starter, generator, water pump, chassis or other bearings or bushings, your most complete source of supply is Johnson. For over fifty years, Johnson has worked hand-in-hand with the automotive industry and has the knowledge, the engineering, the facilities and the workmanship to produce the correct bearing for any application.



Write for Engine Bearing Catalog

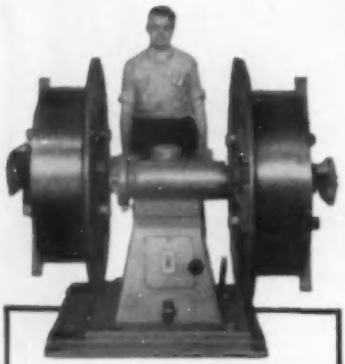


JOHNSON JB BEARINGS
Sleeve-Type

JOHNSON BRONZE COMPANY
625 South Mill Street, New Castle, Pa.

for continuous AUTOMATION

LITTELL Double Automatic Centering Reels



Production continues while you reload one side of this Littell No. 25-12 Double Reel. When one coil is used up the reserve coil swivels into feeding position in a matter of seconds. The idle side is reloaded while the working side pays out. Electric Brake with rheostat controls provide an adjustable spindle drag. The Reel Pedestal, mounted on a machined base plate, permits accurate line-up with the center of the die. No. 25-12 takes a 2500 pound coil on each side, and is one of the many Littell Automatic Centering Reels perfectly adapted to pressroom automation.

Write for the Littell Reel Catalog



Ask for your coil weight calculator

F. J. LITTELL MACHINE CO.

4107 N. Ravenswood Ave., Chicago 13, Ill.

Industry News

(*Continued from page* 540)

American Metal Seeking To Acquire Allianceware

If American Metal Products Co., Detroit, acquires Allianceware, Inc., Alliance, O., it would enable the former to increase its annual volume by about $9 million and provide product diversification. Shareholders still have to approve the plan, whereby American Metal would acquire all assets of Allianceware in exchange for stock.

Allianceware, manufacturer of plumbing ware, has facilities in Colton, Calif., and interests in companies in Canada, in addition to the Alliance plant. For fiscal 1954, it had earnings of $757,054 compared with $770,198 the previous year. American Metal, maker of fabricated metal products for the automotive and aircraft industries, has plants in four states and Ontario, Canada.

Caribbean Nations Account For a Third of Jeep Sales

Willys Jeeps and related vehicles are reported to be making steady gains in sales abroad. Last year, a record number of them was exported to other countries.

The Caribbean nations, which depend heavily on such vehicles for agricultural development, accounted for a third of the 45,797 units shipped. In the last three months of 1954, sales of the vehicles in the Caribbean countries were 30 per cent higher than in the same period a year earlier.

AMA Packaging Exposition To Draw 30,000 Visitors

Some 30,000 business executives from all parts of the U. S. and a number of foreign countries are expected to attend the American Management Association's forthcoming 24th National Packaging Exposition. The show is scheduled to be held from April 18 to 21 at the International Amphitheatre in Chicago.

Approximately 140,00 sq ft of floor space will be occupied by some 375 exhibitors. Trends in both the technical and merchandising aspects of packaging will be summed up at the accompanying AMA Packaging Conference, which will be held at the Palmer House in Chicago.

(*Turn to page* 544, *please*)

for AUTOMATION on slitter, shear or punch press

coil stock

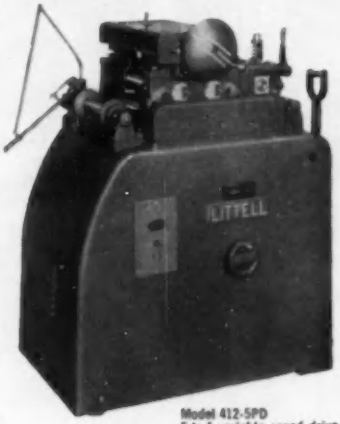


converted to workable

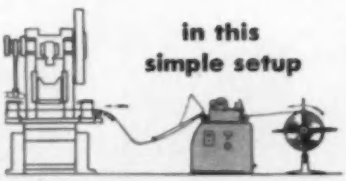
flat stock



by a LITTELL Variable Speed Straightener



Model 412-5PD
5 to 1 variable speed drive
Straightens steel stock up to .125" thick x 12" wide.



in this simple setup

Coil stock comes out of a Littell Straightener commercially flat, in perfect condition for accurate, automatic, high speed work on punch press, shear or slitter. The right straightener for your requirements is in the complete Littell line. *Write for the Littell Straightener Catalog*

F. J. LITTELL MACHINE CO.

4107 N. Ravenswood Ave., Chicago 13



Torture tests prove built-in safety of Solar "Mars" gas turbine engines

THREE "LINES OF DEFENSE" assure absolute safety of every Solar "Mars" gas turbine engine. First, the governor holds the engine at rated speed (36,400 rpm in the unit pictured above). Second, overspeed and overtemperature shutdowns take over if the normal control system should fail. Third, *physical limitations in the engine itself* prevent ruinous overspeeds.

This built-in safety was demonstrated in a special Solar torture test of the Mars. The engine was run up with no load and with all speed and temperature controls disconnected. At 50,050 rpm, speed leveled off because of design characteristics of the compressor and fuel system, and no damage to the power plant resulted.



In addition to its built-in safety, the Solar Mars engine has demonstrated rugged reliability and service life in airborne auxiliary power units. They have logged over 18,000 trouble-free hours with only normal maintenance on the Douglas C-124C Globemaster. Both airborne and ground power units embodying the 60 hp Mars gas turbine are available. Write us, and we'll gladly tell you more about them.

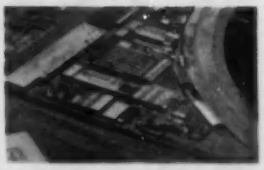
ENGINEERS WANTED. *Unlimited opportunities in Solar's expanding gas turbine program! Write today, giving your experience, to the address in coupon below.*

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This is What Solar Offers You

Solar specializes in the manufacture of precision products from alloys and special metals for severe service. Solar's experience since 1927 is unduplicated in this field. Solar skills and facilities range from research, design and development through to mass production. Wherever heat, corrosion or difficult specifications are problems, Solar can help you solve them.



PLANTS. *In San Diego (photo above) and Des Moines. A total of 1,400,000 sq ft of floor space. Approximately 5,000 employees. Annual sales over $65,000,000.*

EQUIPMENT. *Production equipment for all types of metal fabrication—forming, machining, welding, brazing, casting, coating. Extensive laboratory and testing equipment. Facilities for development, prototype, limited or mass production.*

SERVICES. *Research, design, development, tooling and production engineering staffs. Experienced with all alloy steels, stainless alloys, super alloys, and titanium and its alloys. Government source inspection and Solar quality control meet rigid aircraft and commercial standards.*

CONTRACT PRODUCTION

Current orders include aircraft engine and airframe parts, alloy castings, pneumatic ducting, atomic energy components. Customers include some of the most honored names among aircraft and industrial companies in the U.S. and Europe.

SPECIAL PRODUCTS



Bellows. *"Sola-Flex"® bellows and expansion joints in many designs from ⅛ in. up to the world's largest, 28 ft in diameter.*

Gas Turbines. *Solar "Mars" 30 hp engines for auxiliary generator sets, ground carts, portable fire pumps; Solar "Jupiter" 500 hp engines in variable and constant speed models.*

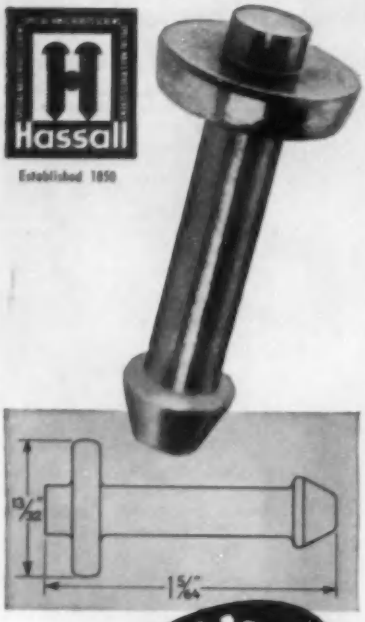
Ceramic Coatings. *"Solaramic"® is the Solar trade mark for a family of coatings that protects metals from heat, corrosion, galling and abrasion.*

Controls. *Complete control systems utilizing the new Solar "Microjet"® principle for control of gas turbines, jet engines and pneumatic devices.*

FURTHER INFORMATION
Your inquiry regarding any Solar product or service will receive prompt attention. Address
Solar Aircraft Company
Department A-79
San Diego 12, California

Hassall

Established 1850



This cost:

SCREW MACHINE	$14.00 per thousand
COLD HEADED	$5.20 per thousand
SAVING	$8.80 per thousand

How about your fasteners or small parts? Have you had an estimate from HASSALL?

This is a typical example of how HASSALL saves thousands of dollars for cost-conscious manufacturers in hundreds of industries. This part is made in one piece by cold heading . . . the part is not only lower in cost but also stronger and just as accurate. Savings amount to $8.80 per thousand and this manufacturer used hundreds of thousands a year!

Perhaps your parts can be made by this better, lower cost method. Send samples or sketches of your parts for a prompt, $ $ $ saving quotation.

- Send for 3 color decimal equivalent wall chart.
- On request, our 36-page catalog.

HASSALL SERVICE

JOHN HASSALL, INC.

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Industry News

(*Continued from page 542*)

New Campaigns In Motion For Car Safety Belts

New efforts are being made to require safety belts on automobiles. Several attempts have been made in the past for legislation which would make safety belts mandatory on cars, but the idea never got very far. It has been pointed out that few persons would bother to strap themselves in every time they go for a ride, and that motorists would frown on the costs for the device, estimated at $35.

There is now a concerted drive in Wisconsin for a law which would make safety belts compulsory, and several organizations in the state have adopted resolutions favoring them. A bill requiring the belts is presently being studied in Congress. It is claimed in some quarters that safety belts would cut traffic injuries and deaths by as much as 50 per cent.

Car manufacturers have offered safety belts in the past, but dropped them because they were never widely accepted. Ford is now testing a new type of belt and says it can install it in cars if motorists want it.

Vance Named To Head New Program By ODM

Ever since the Office of Defense Mobilization was set up shortly after the Korean War, many of the country's key industrialists have been called upon by the Government to help it solve complex production and procurement problems. Among those named recently is Harold S. Vance, chairman of Studebaker-Packard Corp. He will head an advisory committee of six industrialists who will recommend a program on components and production equipment.

Dutch Government Places Order For 4000 Jeeps

Willys has added another overseas customer for its Jeeps. An order for 4000 of the vehicles has been placed with Willys by the Dutch government, the largest single order placed for Jeeps outside the U. S.

In addition, the company hopes to receive an order for spare parts for the first 2000 vehicles, and a subsequent order with the balance of the Jeep order. The parts orders are expected to total $1 million.

(*Turn to page 546, please*)

"SERV-RITE" THERMOCOUPLE HEAD



the head that's ahead in every way . . .

This new "Serv-Rite" thermocouple head is actually small enough to be held comfortably in the palm of your hand. But size is only one of the many features that make this thermocouple head really extraordinary. It is loaded with installation and service conveniences that any user of thermocouples will appreciate at once.

The body is of malleable iron, cadmium plated for durability. A new type friction lock assures easy removal or tightening of the cap — a quarter turn does it. An asbestos gasket makes the head dirt- and moisture-proof. With a choice of ½", ¾", or 1" IPS opening for the protecting tube, you can standardize on one style head.

The connector block is of a material especially selected to withstand, without damage, temperatures up to 900° F. in continuous service. Improvements over the conventional type of inserts greatly simplify the making of the lead wire connections. The complete thermocouple element, including connector block, can be easily withdrawn for inspection.

Install a "Serv-Rite" thermocouple head and see for yourself how much better it really is.

Write for complete details

4421

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Manufacturers • Engineers • Distributors

Thermocouples & Accessories • Temperature Control Instruments • Industrial Furnaces & Ovens Metallurgical Testing Machines

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SERVING THE AUTOMOTIVE INDUSTRY

Look to "U. S." for your ADHESIVE needs

Consider these advantages:

1. United States Rubber Company is a specialist in rubber adhesives. "U. S." provides specialized engineering service to the automotive industry.
2. "U. S." is equipped to make vast quantities of adhesives, both solvent and water-dispersion types.
3. "U. S." makes its adhesives from natural rubber, reclaim rubber, GR-S, Neoprene, and Buna-N, to provide standard or specially-compounded adhesives to handle any bonding problem encountered by the automotive industry.
4. Shipments are made quickly and at *low* freight cost from central locations.

For fast, immediate service or placement of orders, phone Trinity 4-3500 or contact the address below.

"U. S." Research perfects it..."U. S." Production builds it.

UNITED STATES RUBBER COMPANY

Automotive Sales, Mechanical Goods Division, New Center Building, Detroit 2, Michigan

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source

with years of experience,
proven ability
and adequate facilities
to handle your
complete automation program.

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WITH A
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MAXIMUM PERFORMANCE and LONGER LIFE

from their heavy duty diesel and gasoline engines. There is a critical point at which an engine gives maximum performance without undue strain or smoking. That point is measured and checked in RPM's by JONES TACHOMETERS, designed for accuracy and shock resistance and preferred by the country's leading truck and engine manufacturers.

Write for BULLETIN 146G

JONES MOTROLA CORP.
Stamford, Conn.

Industry News

(*Continued from page* 544)

Canadian Car Makers Fight Against High Excise Tax

Canadian automobile manufacturers are continuing their battle to have the luxury excise tax of 10 per cent taken off all automobiles. In 1954, the Canadian automobile industry paid $138 million in excise and sales taxes to the Canadian government. Taxes averaged $400 for each vehicle made in Canada.

Automobile and truck production was down 28 per cent last year to a total of 351,500 vehicles. There were 264,700 passenger cars for domestic sale in Canada; 19,700 cars for export; 57,000 trucks for sale in Canada; 10,100 trucks for sale outside Canada; and 83 buses for sale in Canada.

Import Duties on U.S. Cars Reduced for Border Mexicans

The Mexican Government has confirmed reports that Mexicans in frontier areas will only pay 10 per cent of import duties on cars bought in the U. S. Stipulation is that the cars cannot go deeper into Mexican soil than 12½ miles, nor further than an equal distance east or west, without paying the full import duty.

The border area owners of cars have to wait a full five years before they can drive the car further into the country. After this lapse of time, the car is considered officially "nationalized" without restrictions of any sort.

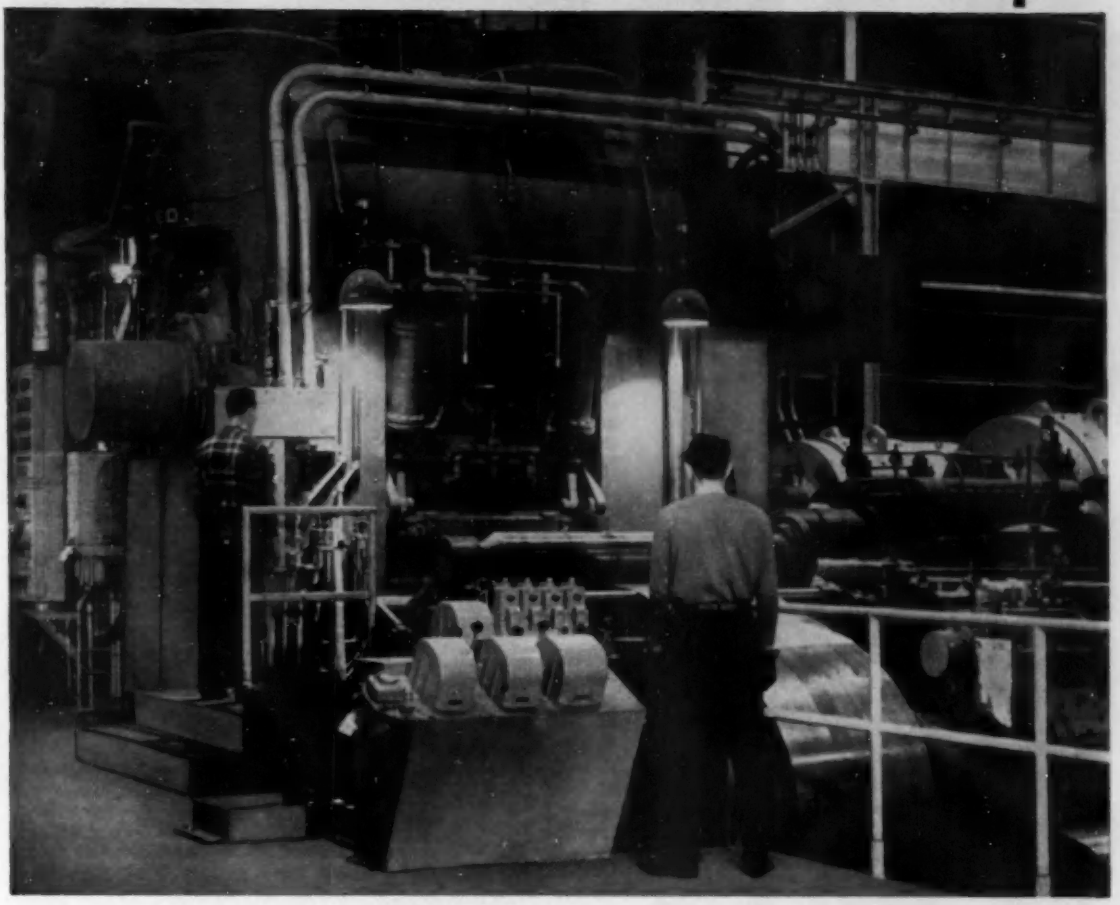
Headlight Aim Vital With New Type Lamp

Headlamp aiming will get a lot of attention with adoption of the new type sealed beam headlamp next year. Service shops are being urged to acquire proper equipment and techniques to meet the need for better aiming.

Actually, car design has affected aiming specifications because movement of seats forward has reduced "tail-sag" deviation between loaded and unloaded positions of the car. Deviation allowance now recommended is four inches, which means aiming two inches below the horizontal at 25 ft. The old recommendation was three inches below horizontal to allow a six-inch deviation.

(*Turn to page* 548, *please*)

You'll like our service and the quality of our cold rolled sheets and strip



Cold reduction mill at our Indiana Harbor Works, now completing its first year of full-scale operation.

Customers like the uniform high quality of our cold rolled sheets and strip. They find that with Youngstown they have few rejects, low fabrication costs.

Youngstown cold rolled sheets and strip are held to rigid, high standards of ductility, tensile strength and other forming characteristics that mean money in your pocket.

Let us schedule your requirements NOW. Whether you need a carload a week or a few coils per month, you'll like our service and quality.

QUALITY YOUNGSTOWN SERVICE

Youngstown

COLD ROLLED SHEETS AND STRIP

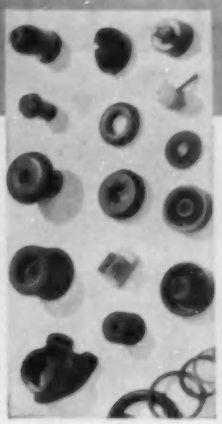
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NATURAL SYNTHETIC SILICONE
RUBBER PARTS AND COMPONENTS

Custom-Made BY GOSHEN TO YOUR EXACT SPECIFICATIONS



make GOSHEN your HEADQUARTERS for

CUPS
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Producing custom-designed parts, of carefully-compounded materials, is a Goshen specialty. Parts are not stocked, but are fabricated exclusively on order to meet your strictest specifications as to compound, service-life and operating satisfaction. Your inquiry regarding any rubber parts problem is invited.

See our Facilities Catalog in Sweet's Product Design File.

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CUSTOM DEVELOPMENT AND FABRICATION SINCE 1916
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DEKA BORE

saves 80% of boring time

DEKA-BORE (and only DEKA-BORE) can be adjusted in fractions of 1/10,000" on the full diameter as easily as reading 1/16" on a steel rule. NOT A VERNIER OR SCROLL ADJUSTMENT. Can be calibrated in increments of .00005 on radii or .0001 on diameter as easily as picking up .002 on a conventional micrometer dial.

100% GUARANTEED!

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Gentlemen: Please send me
☐ Name of nearest DEKA-BORE distributor, who will arrange free demonstration.
☐ Free literature and prices.

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FIRM _____
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CITY _____ ZONE ____ STATE ____

Industry News

(*Continued from page* 546)

GM Breaks Ground for Last Of 30 Training Facilities

Breaking of ground on Feb. 28 for a new General Motors Training Center in Pittsburgh, Pa., marked the start of construction on the last of 30 such units GM will have opened in the last two years. Occupying about 26,000 sq ft of space, typical size of all new GM training centers, the new unit is scheduled to be opened late this year.

Brazilian Rubber Industry Makes Excellent Progress

The rubber industry in Brazil has developed considerably, according to the latest statistics available. The 65 establishments in 1940 increased to 93 in 1950, while the number of workers employed in this field rose from 3071 in 1940 to 7484 ten years later.

Although the present requirements of rubber manufacturers are about 60,000 tons, this figure will likely increase to 100,000 tons in a couple of years. Thus, it may be necessary for Brazil to import about 40,000 tons of rubber from abroad.

Mexican Car Prices Boosted By Taxes

Mexican automobile prices rose by 20 per cent recently as new import and *ad valorem* taxes went into effect. Replacement parts, engines, car bodies, etc., sent into Mexico for assembly locally have also been increased correspondingly.

Industry observers in Mexico have predicted that the new taxes will mean a boost for used car prices.

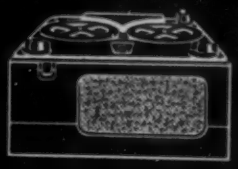
The taxation decree stipulated also that base of units to be assembled in Mexico must total 70 per cent of the finished car. Separate taxes will be imposed on automobile radios, heating and air-cooling systems, and any extra tools which are standard equipment.

Dow Will Continue Lease On U.S. Magnesium Plant

Dow Chemical Co. will continue to lease the Government's $26 million magnesium plant in Velasco, Tex., unless an offer to buy it is made by another company. Originally, Dow sought to purchase the plant, but Justice Dept. complications intervened.

PREVENT Rust with MACCO BLUCOAT

the amazing between-operation rust proofing solution



RECORDER precision parts are being given the Macco Blucoat Rust Preventive treatment by one of the nation's leading electronic manufacturers.



GEARS cut ground and tempered are treated with Blucoat to prevent rust during storage, shipping and assembly.



CARBURETOR bodies and large engine castings being treated with Macco Blucoat to prevent rust after machining and during storage.



AUTO bodies of one of the world's largest body manufacturers are given the Blucoat treatment to prevent rust before painting.

***MACCO CASE HISTORY**

Blucoat is the almost unbelievably efficient and time-tested rust preventive used by leading metal processors and fabricating manufacturers the country over. They endorse its use as the only practical method of preventing rust between production operations and assembly —and during interplant transportation and storage.

5 REASONS FOR BLUCOAT'S NATIONAL ACCEPTANCE:

1. Blucoat is water soluble, making it economical, yet extremely efficient.
2. Blucoat is adaptable to an almost unlimited variety of applications and conditions.
3. Blucoat's powerful rust inhibitor works equally well on steel, cast iron, forgings or die castings.
4. Blucoat leaves no oily film—adheres better to metal—collects less dust, chips, etc.
5. Blucoat has withstood perfectly a salt spray test of more than 80 hours. Vastly superior to soluble oil, it contains no poisonous elements. No alcohol, making it exceptionally stable.

For the prevention of rust, Blucoat positively has no equal. Whether the product be the finest of automobile bodies or simply bale tie-wires, Blucoat's versatility makes it most indispensable for any metal processing plant.

Write today or call a Macco sales engineer. Phone Prescott 9-0800, Chicago.

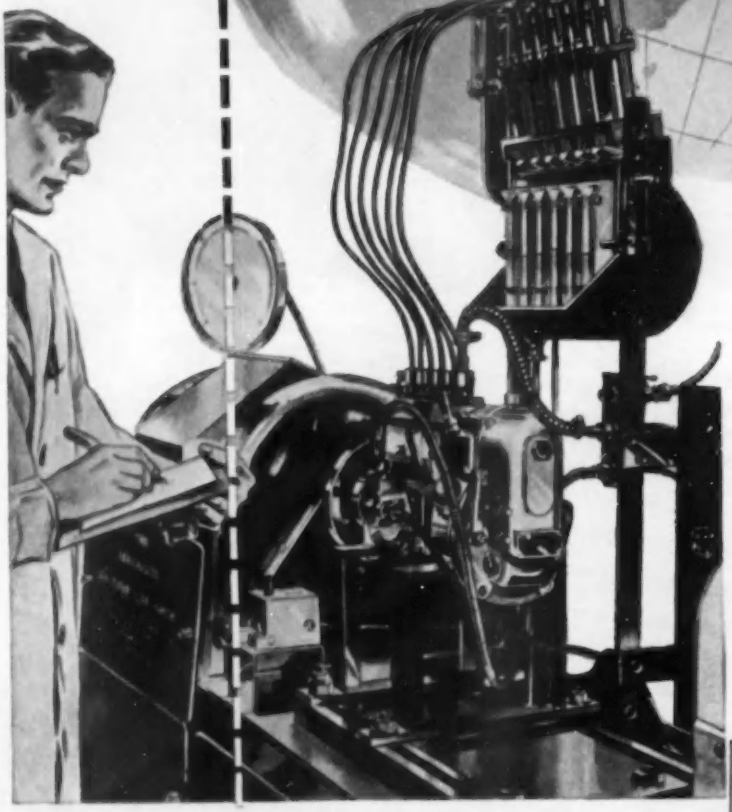
*Actual Case History available on request.

MACCO PRODUCTS COMPANY

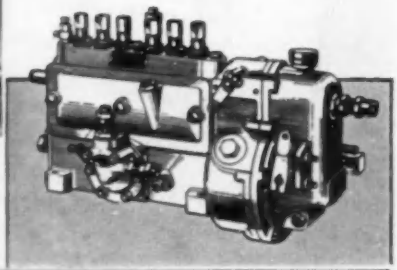
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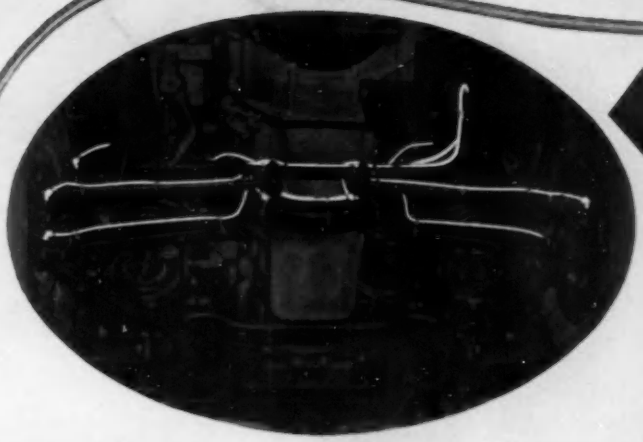
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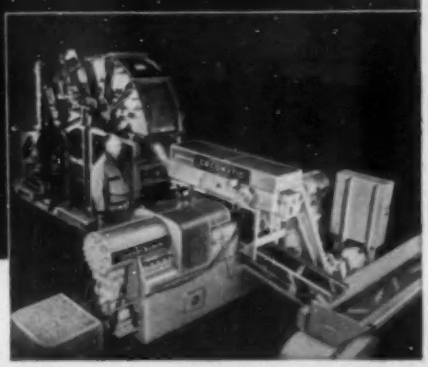
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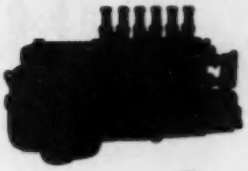


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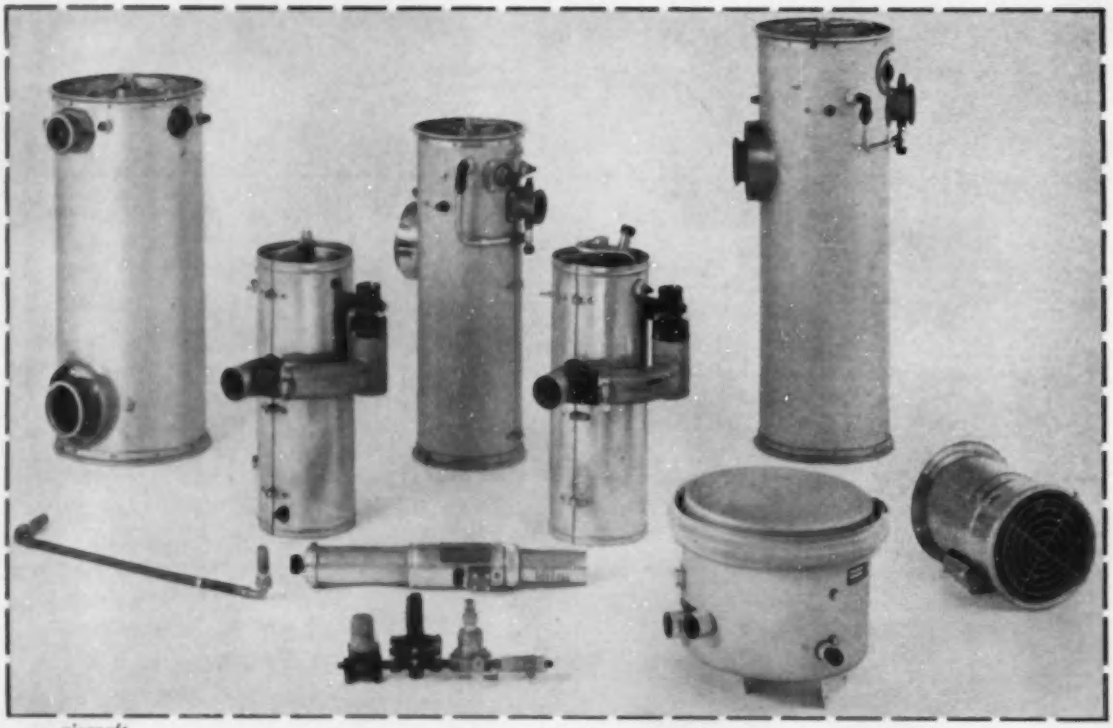


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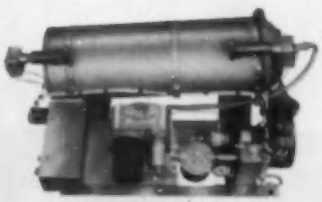
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aircraft



automotive

Whatever your needs for heating of ground vehicles or aircraft of all types, Janitrol either has the exact unit for the job—or can tailor-make it.

Shown here are but a few of the Janitrol combustion heaters—embodying such engineering advances as the whirling flame, radiant tube, air-loaded fuel pressure regulators, "demand operation," and radio-shielded ignition. They supply heat for thermal anti-icing, for comfort on aircraft, and for drivers and passengers of buses or other commercial or military vehicles. They also keep engines of all types—aircraft, automotive, and stationary—in summer starting condition regardless of outside temperature.

Call in your Janitrol representative for exact engineering experience which can quickly point the way to solution of your problem.



Super-G Constellation: Latest luxury airliner, just placed into service by TWA. Two Janitrol 125,000-Btu units provide the heat for the passengers and crew and all anti-icing needs.

Douglas DC-7: Four Janitrol heaters with combined capacity of more than 1,000,000 Btu/hr. serve these crafts' anti-icing and comfort needs dependably on the ground or at their normal cruise altitude of 25,000 feet.

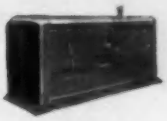
Aero Commander: Twin-engine executive aircraft, heated by Janitrol to make business travel a pleasure. The nose-mounted Model S-25 provides comfort at any altitude, in any weather.













Air Force Crash Truck: Winterized to 65° below zero with a Janitrol 90,000 Btu heater that provides heat for the engine block, engine pan, battery box, radiator, cab and body, defrosters, generator, and pressure vessel heating.

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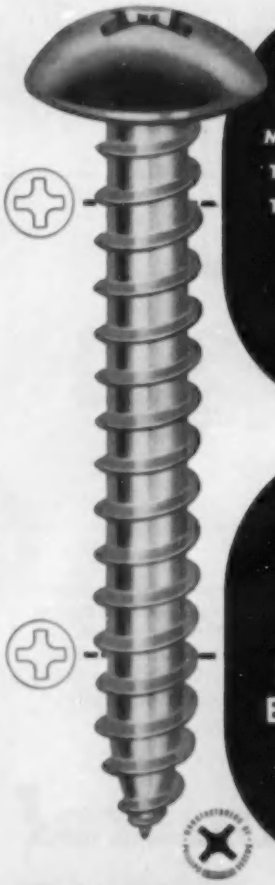
Bus Fleets: Transit operators report Janitrol liquid heater equipped coaches run up to 40% longer between ring replacement and engine overhauls. Janitrol heaters keep engines clean, allow outside storage in winter.

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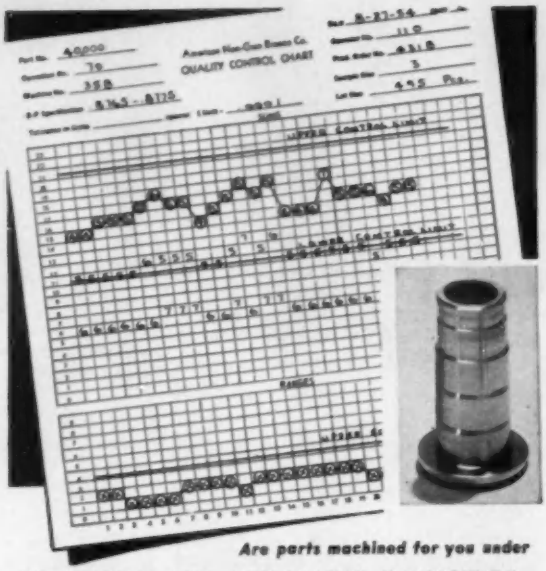


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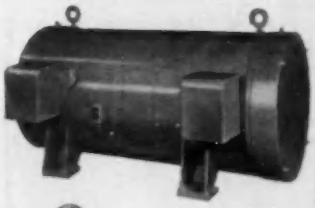
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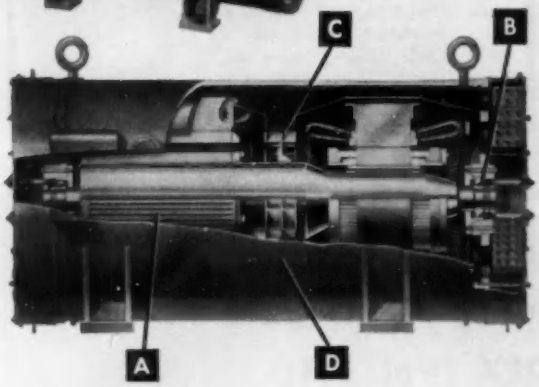
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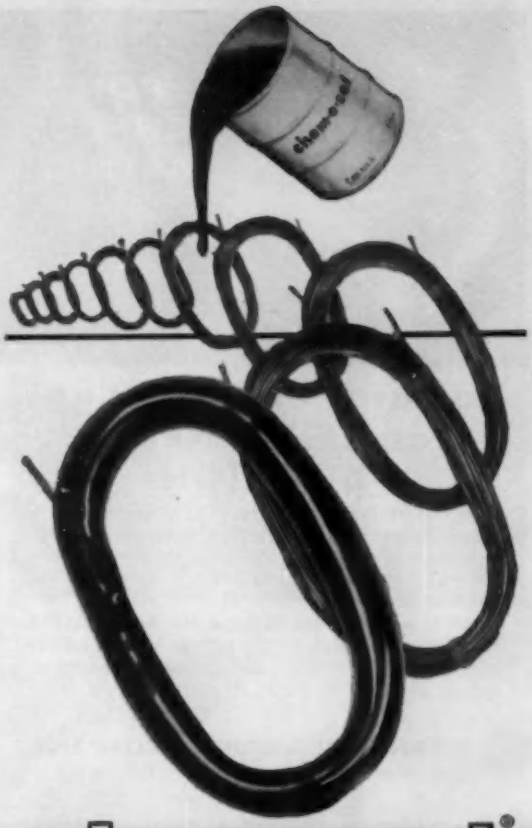
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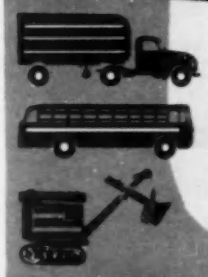
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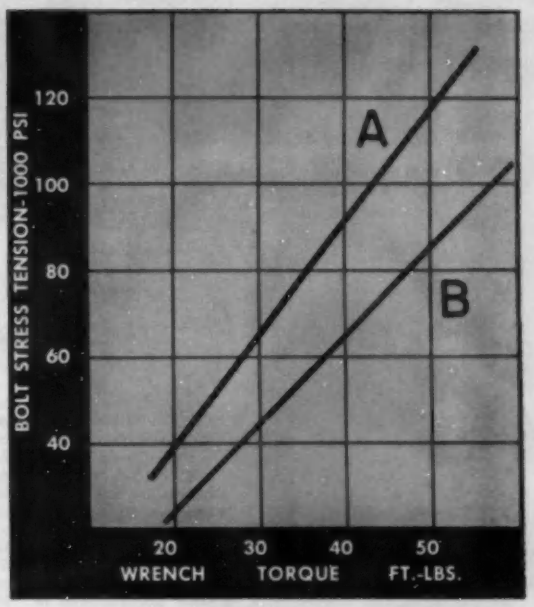


Figure 5

24 page
engineering data...
Section

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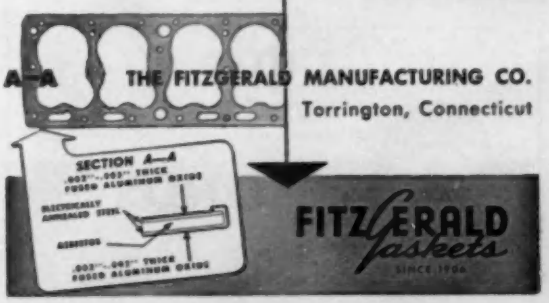
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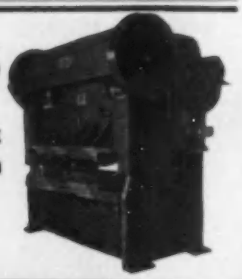
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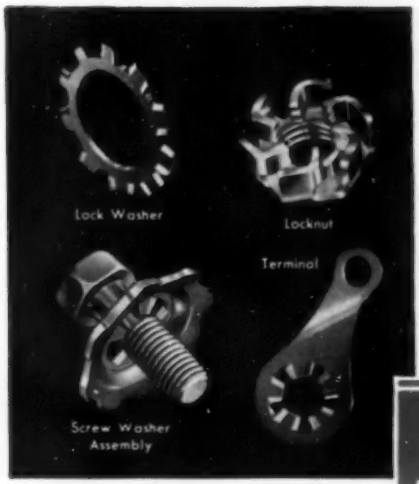


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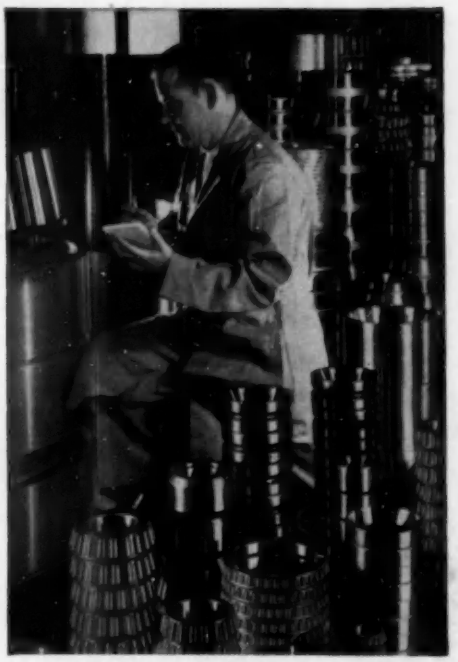
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